Lebanon's history has been scarred by repeated episodes of armed conflict: the Civil War, the Israel-Lebanon war, the Nahr-el Bared clashes, the recurrent clashes in Tripoli between Bab al-Tabbaneh and Jebel Mohsen, and, more recently, the spill-over from the war in Syria. This has resulted in tragic human loss, trauma, disruption of communities and families, migration and displacement, and the destruction of infrastructure and property. Less well-known, but certainly not less substantial, have been the effects of armed conflicts on North-Lebanon's natural environment.

In this book, we explore these direct and indirect impacts of violent conflict on North Lebanon's natural environment and their effects on the livelihoods of the population of North Lebanon. We do so through a series of stand-alone studies. All chapters draw on an analytical framework revolving around the concepts of vulnerability and resilience of citizens, municipalities and the private sector in the management of their environment and protection of natural resources.

Three components are essential in the analysis: exposure, sensitivity and resilience. We explore various manifestations of resilience that have often developed in the absence of contingency planning, disaster management plans, emergency response mechanisms or even the acknowledgement of an emergency situation. Resilience, in such a context, first and foremost requires cooperation to muster the capacity to address environmental degradation that emerged from the conflict itself or flourished in the absence of formal governance structures.

We argue that it is necessary to integrate lessons from the complex political reality of multiple political authorities and plural and instable political institutions into our analyses of vulnerability. As such, our book not only offers innovative analysis of the multifaceted relations between conflict, vulnerability and the natural environment, it also calls for a re-positioning of the notion of vulnerability in relation to state fragility and political hybridity.

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CONFLICT AND ENVIRONMENT IN NORTH LEBANON

Irna van der Molen and Nora Stel (eds.)

CONFLICT AND ENVIRONMENT IN NORTH LEBANON

Vulnerability and resilience from a multi-disciplinary perspective

Edited by Irna van der Molen and Nora Stel

UNIVERSITY OF TWENTE.

N𝒲O
Netherlands Organisation for Scientific Research
WOTRO Science for Global Development

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CHAPTER 1

INTRODUCTION

Conflict and Environment in North Lebanon: Vulnerability in a Volatile Socio-Political Context

Irna van der Molen and Nora Stel

Abstract: This chapter constitutes the introduction to our edited volume. It offers an overarching conceptual framework on vulnerability revolving around the notions of exposure, sensitivity and resilience. Drawing out the overlaps and tensions between the various chapters making up the book, this chapter provides a tentative conceptual linkage between vulnerability and political economy, asking where and how political fragility and institutional hybridity affect vulnerability.

Keywords: Conflict, environment, vulnerability, political economy

1. WHAT IS AT STAKE? ISSUES AND CONCEPTS

Conflict and the natural environment are closely linked. Homer-Dixon's work (1994, 2001) has been instrumental in staging a lively academic debate on the question whether, to what extent, under what conditions and in what way(s) natural resource scarcity contributes to armed conflict. The discourse on the relation between environment and war, or environment and security, has been further added to by studies on the 'resource curse', where the abundance and lootability of natural or mineral

resources were said to cause conflict, rather than its scarcity (LeBillon, 2001, 2012; Bannon and Collier, 2003; Collier, 2010).

Lebanon's recent history and current socio-political climate are volatile and conflict-ridden. The 1975-1990 Civil War left many scars and the 'post-war' period has been characterized by an almost ceaseless sequence of clashes, attacks, assassinations and bombings. North Lebanon has known its own trajectory of conflict, including the infamous clashes between the Lebanese Armed Forces (LAF) and militants in the Nahr al-Bared Palestinian refugee camp in 2007 and the recent sectarian clashes in Tripoli flaring up as a proxy to the Syrian war.[1] These violent conflicts have left their marks in various ways, ranging from psychological trauma (Gannagé, 2012a, 2012b; Khamis, 2012), social fragmentation (Choueiri, 2007) and economic deprivation (Salti and Chabaan, 2010; Acra and Acra, 2006) to political marginalization (Volk, 2009).

Less well-known, but certainly not less substantial, have been the effects of armed conflicts on North Lebanon's natural environment. These effects are often direct, as is the case with, for instance, war-related debris, coastal and groundwater contamination as well as land pollution as a result from oil spills after the Israeli War on Lebanon in 2006. Other direct impacts were land degradation, people's displacement, and major infrastructural damage. Apart from such direct environmental damage, Lebanon's repeated episodes of violence[2] have had a more indirect effect on the natural environment as well. Repeated

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[1] In the empirical chapters, the authors specifically focus on three episodes of violent conflict: Israel's 1982 invasion of Lebanon; the 2006 War between Israel War on Lebanon; and the 2007 Nahr al-Bared clashes.

[2] When we talk of 'repeated episodes of armed conflict', we refer to various episodes of conflicts of a different nature, not to a repetition of one conflict in the same area, with the same conflicting parties and about the same conflict issues.

episodes of armed conflict have affected the ways in which agriculture, fishery, industries, tourism and water and waste sectors are governed and regulated. Lack of regulation and enforcement results in soil erosion, depletion of underground water resources, pollution from pesticides, fertilizers and agricultural by-products and seawater contamination from unregulated industrial waste disposal (Integrated Management of East Mediterranean Coastlines Program (IMAC), 2007b).

In this book, we explore these direct and indirect impacts of violent conflict on North Lebanon's natural environment and their effects on the livelihoods of the population of North Lebanon. We do so through a series of stand-alone studies. All studies, however, draw on an analytical framework revolving around the concept of vulnerabilities, on which we further elaborate below. The starting point for the research program 'Conflict and Environment in North-Lebanon' has been the vulnerability framework by Turner et al. (2003:8075), without, however, the intention to "develop appropriate metrics and measures for assessments, models and tests", and without the illusion we would be able to quantify "the stochastic and non-linear elements operating on and within the coupled system."

When we define vulnerability as the susceptibility of particular communities or systems to specific risks and hazards (Turner et al., 2003),[3] three components are essential in the analysis: *exposure* (the extent to which a human or biophysical system is confronted with the risk or hazard in question, here: violent conflict); *sensitivity* (the likely damage the conflict will do to these systems); and *resilience* (the coping or response

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[3] Turner et al. (2003:8074) define vulnerability as: "The degree to which a system, subsystem or system component is likely to experience harm due to exposure to a hazard, either a perturbation or stress/stressor." For an overview of different approaches, definitions and analytical frameworks of vulnerability, see Birkmann (2006) and Wisner et al. (2004).

mechanisms available to the systems to mitigate the impacts of conflict).

Although it seems difficult to measure *exposure* of an area to armed conflict, we argue that some areas in Lebanon were more affected by armed conflict than others, depending on the proximity to borders (with Syria, Israel); polarization among the population (resulting in sectarian violence), the history of violence in the area; the proximity to refugee camps – specifically the Nahr el-Bared camp in Tripoli and the Ain el-Hilweh camp in Saida, and the influx of refugees. Similarly, not all municipalities were equally *sensitive* to the damage that conflicts do to its population and the natural environment, including its resource-base.

Finally, *resilience* is – in this particular book – related to the capacity of citizens, households, and stakeholders in the public and private sector to cope, respond and adjust to the impacts of conflict on the natural environment and livelihoods. We add livelihoods, as these are intrinsically related to the natural environment, in particular among populations that are more vulnerable (more poverty-prone) than others. Poorer communities are not, by definition, more vulnerable to violent conflict in terms of exposure,[4] but, without adequate facilities, services, human resources, and institutional capacity, they are less capable to cope with the environmental degradation that is the direct or indirect effect of these conflicts.

We explore various manifestations of resilience, that have developed in the absence of contingency planning, disaster management plans, emergency response mechanisms or government recognition of a population, or acknowledgement of

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[4] Although some commentators argue that North Lebanon's relative deprivation results in a relative over-representation of the region among recruits for both the LAF and non-state militias and terrorist cells.

an emergency situation.[5] Resilience requires cooperation; moreover, it requires a minimum capacity to address the environmental degradation that has either emerged from the conflict(s) itself, or could flourish in the absence of governance structure.

The conflicts[6] that took place in North Lebanon during the last four decades – from the Civil War, to the Nahr el-Bared crisis and the current 'Syrian spill over' – and their environmental consequences are intricately related to the fragile nature of Lebanon's political system.[7] In Lebanon, 'vulnerability' should therefore be positioned in the context of fragility of the political system. Lebanon's consociational system constitutes a paradox. It is remarkably protracted on the one hand: the overarching logic of an elite bargain managing the distribution of state positions and resources has not been seriously challenged since Lebanon's independence. On the other hand, however, the dynamics within this relatively constant system are distinctly volatile: the balance of power between the political leaders representing Lebanon's various sectarian communities is instable and intra- and inter-sectarian alliances are shifting constantly.

This instability of the inter-sectarian balance, ironically generated by the stability of the consociational system, is

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[5] Government support starts with recognition of the existing population and emergency situation. Some villages in North-Lebanon are not registered as municipality and therefore do not have access to regular services of local authorities. Some emergencies are not officially acknowledged as such.

[6] We use the general term 'armed conflicts', since Lebanon has experienced a variety of conflicts: the Civil War, inter-state wars (Israel and Hezbollah); intra-state war (Lebanese Army- Fatah al-Islam in Nahr el Bared), and non-state wars (clashes between supporters of Syrian President Bashar al-Assad in the Alawite neighbourhood of Jebel Mohsen and opponents of the Syrian President Bashar al-Assad, in the Sunni district of Bab al-Tabbaneh in Tripoli). (Sarkees, 2010).

[7] Fragility here should be dissociated from the normative connotations of the failed state paradigm.

intimately related to the conflicts in Lebanon. Consequently, in one of the chapters, we position our exploration of environmental and human vulnerability firmly in the context of political fragility. The coping capacity and resilience of communities is affected by: (i) the multiplicity of political authorities (state *and* non-state); (ii) a plurality of political institutions (de jure policies *and* de facto practices); and (iii) the before-mentioned dynamism of political structures (protracted sectarianism *and* changeable alliances). This has been conceptualized as 'political hybrid order' which is characterized by:

> diverse and competing authority structures, sets of rules, logics of order, and claims to [that] power co-exist, overlap, and intertwine, combining elements of introduced Western models of governance and elements stemming from local indigenous traditions of governance (Boege et al., 2009:17).

Vulnerability, the overarching theme of this volume, is thus analysed from different perspectives in the various chapters. Yet, all chapters indicate that municipalities in North Lebanon have been differentially at risk to armed conflict (exposure); that the human and environmental conditions in North Lebanon are quite diverse, resulting in differential environmental and livelihood impacts (sensitivity); and that communities have different coping capacities and that resilient communities strongly rely on networks and cooperation (resilience). This reveals, clearly, that environmental degradation cannot and should not be attributed to armed conflict only. For example, the 2007 Israel-Lebanon war resulted in large oil spills due to the bombing of the oil plant in Jiyyeh. Illegal oil spills from ships are, however, a continuous problem for the marine environment in North Lebanon.

Moreover, specific forms of environmental degradation are linked to recovery and economic growth, in other words to resilience. The built environment, for example, depends on large amounts of sand and stones from the quarry industry, which has

been documented of circumventing environmental regulations (Leenders, 2012). Vulnerability and resilience are, in other words, not easy to pinpoint to one community, or one hazard, and communities that have been vulnerable in one sense, have been resilient in another.

2. OUTLINE OF THE BOOK

We start this book with two review chapters, one focusing on vulnerability and the other conceptualizing resilience. These chapters discuss current theory, approaches, and concepts and identify gaps. These conceptual chapters (Chapters 2 and 3) will be then followed by a chapter describing the socio-economic, political, and bio-physical features of the case study area. Subsequently, we offer eight empirical chapters that follow the main themes of exposure, sensitivity, and resilience. In the final discussion, we return to theory, with the question how the application of vulnerability and resilience can be applied in a context of repeated episodes of armed conflict.

The empirical chapters are divided over three parts. Part one – encompassing Chapters 5, 6 and 7 – particularly focuses on exposure and sensitivity. Part two – consisting of Chapters 8 and 9 – deals predominantly with resilience at individual, community and municipal level. Part 3 – comprising Chapters 10 and 11 – looks at the international aspects of resilience and the choices that donors make in their allocation of aid.

2.1. Part One – Exposure and Sensitivity

In Chapter 5, we start with a historical overview of recent conflicts, which shows how particular areas in North-Lebanon have been more exposed to clashes and episodes of armed conflict than others due to its proximity with borders (Syria), the influx of refugees (Syrian, Palestinian); existence of Palestinian refugee

camps with their own governance system; and political polarization among the population, in particular in some neighbourhoods of Tripoli. Based on documentary analysis, we then examine the relations between armed conflict, degradation of land and changes in land use, both as a manifestation of, and in response to, biophysical and human vulnerability. To identify land degradation and analyze land use changes, we used an evaluation model based on satellite data. We also looked at other factors, such as artificialization of the coastline and increase in population. Based on our findings, we argue that, while armed conflict directly contributes to land degradation, it also changes the human system in ways that eventually result in further land degradation.

In Chapter 6, we explore the spatial variation of the impacts of conflict on the natural environment and peoples' livelihoods (sensitivity) and contrast potential exposure and sensitivity across different areas in North Lebanon's coastal zone. The mapping of spatial variation of 'sensitivity' was achieved through a combination of literature and document research, a survey of 500 interviews with citizens across all 24 municipalities of the coastal zone in North-Lebanon,[8] and semi-structured in-depth interviews

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[8] The aim of the survey was to collect data that was not available in secondary literature, such as age, family size, education level, occupation, income per capita, membership of any organization or group, entitlement to land or resources (such as land and home ownership), informational assets (such as number of people connected to the internet and landlines, and the number of people with a mobile number and television), and material assets (such as type of lighting, sources of water, and type of health services).

The sample size was calculated using the formula $n = \frac{N}{1+N(e)2}$ (Israel, 1992:4); where n is equal to the sample size, N to the population size, and e to the level of precision which is equal to 10% for each region and 5% for the entire study area. The level of precision for the entire region was set as 5% for more precision. After calculating the number of questionnaires for each area, the number of questionnaires to be returned in each village or city was determined based on the population of each village and city as a proportion to the total population of each area. The participants were chosen based on simple random sampling. This approach was chosen for two main reasons. The first being the

with the heads of those municipalities and other stakeholders encompassing representatives of institutions that were involved in post-conflict interventions such as United Nations Development Program, Ministry of Environment, Ministry of Social Affairs, and Ministry of Agriculture. This resulted in a social vulnerability index.

Having explored the meaning and manifestation of both exposure and sensitivity in the preceding chapters, Chapter 7 tackles vulnerability in a comprehensive way by developing a nascent framework to measure the political components of exposure and sensitivity that builds on existing data from the Human Development Index (HDI). The chapter identifies and discusses the change in rankings of countries and governance indicators and critically explores the various indexes are calculations used in HDI rankings. We find that governance plays an important role in terms of enhancing or reducing human development and thereby vulnerability.

2.2. Part Two – Resilience

We devoted a number of chapters on resilience; resilience not only to the impacts of armed conflict on the natural environment as described above, but also to environmental problems that exist independent of armed conflict. We look at resilience at several levels: at the individual level, taking 'agency' and 'opportunity structure' as variables affecting 'empowerment' and involvement in decision-making processes at community level (Chapter 8) and at the municipal level, focusing on cooperation between citizens and municipalities (Chapter 9).

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lack of official statistical reports providing detailed information about age, gender, education, etc. at the local level. The second was the complex nature of the population in Lebanon in general, and in the north in particular, which is characterized by diverse religious, political, and ideological affiliations. Before distributing the survey, a pilot test was carried out for acceptability and accuracy, and the questionnaire was subsequently adjusted as required.

In Chapter 8, we use the same dataset as in Chapter 6 to analyze how agency and opportunity structure have affected the empowerment of individuals in North Lebanon, and what this means for individuals participation in decision-making processes.[9] For this, we use the analytical framework by Alsop et al. (2006).[10] Empowerment can not only be considered as extension of agency. The factors that affect individuals' likelihood to be involved in decision-making at community level shows great variation; while the probability of their involvement increases in some

[9] Additional focus groups were organized to gather data on indirect indicators of the opportunity structure and understand the relationship between citizens' agency and the opportunity structure, and its influence on the degree of empowerment.

[10] In the survey, data on indirect indicators of agency and direct indicators of empowerment were collected from citizens. Indicators were selected from Alsop et al. (2006). Some of the indicators were adjusted to fit the context of the study site. To assess agency, asset endowments covering information, material, financial, organizational, psychological, and human assets were used as indicators. Information assets indicators were access to various sources of information such as television, internet, telephone, and mobile subscription. Materials assets indicators were home and land ownership. Financial assets indicators were occupation, income, and employment history. Organizational asset indicators were membership of organizations, effectiveness of organization, and benefits from organization membership. Psychological assets indicators were self-perceived exclusion from community activities and capacity to envisage change. Human assets indicators were education level, age, gender, marital status, and family size.

In addition, direct indicators of empowerment were measured in three domains: the state domain (with a focus on public service delivery), the market domain (with a focus on labour) and the society domain (with a focus on community). Indicators for the public services were: quality of public services used, percentage of individuals that complained about public services delivery, satisfaction with the outcome of a complaint, equitability in addressing needs and concerns, influence of political and religious characteristics on the authorities' treatment of people. Indicators for empowerment in the labour sub-domain, were: control over employment or occupation choices. To measure empowerment in the community sub-domain, indicators were: awareness of the main local public service decision-makers, involvement in community decision-making processes, aspiration to be more involved in community decision-making processes, and influence in community decision-making processes..

municipalities with the individual's level of education; in other municipalities it is correlated to gender, age and aspiration for life change. The willingness of citizens to participate in decision-making is dependent on whether they trust or distrust the outcomes of the decision-making process.

The influence of trust on citizen's willingness to cooperate with the authorities is again taken up in Chapter 9. Here we use the same survey data as in Chapters 6 and 8, but complemented these data with participatory data solicited through the Fuzzy Cognitive Mapping technique.[11] We look at the extent to which citizens themselves indicate their preparedness to comply with existing regulations and to volunteer for environmental management initiatives. Their cooperation is, amongst others, related to their trust in the functioning of government authorities, and directly touches upon the legitimacy of the fragile political system. The findings show a complex reality: while trust and cooperation, between citizens and stakeholders in the public and private sector are indeed important to jointly address

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[11] This participatory data was collected from the stakeholders for the case study of solid waste management in Al-Fayhaa Union. The Fuzzy Cognitive Mapping (FCM) approach was described using an unrelated map representing a neutral problem domain. Participants represented stakeholders from the public sector (municipalities, municipality union, ministries, public institutes); the private sector (private companies; experts; academic and research centres; sectors that produce waste; and chambers and syndicates related to solid waste management); and grassroots NGOs. Each working group consisted of a maximum of six participants and one moderator to facilitate the exercise. Every working group was asked to draw a cognitive map to answer the following questions: What are the factors that affect or are affected by the solid waste management in Al-Fayhaa area? and How do these factors affect each other and what is the particular role of trust on these variables?

To analyze the five maps aggregated by the workshop participants according to graph theory, the maps were transformed into adjacency matrices attributing values between -1 and 1 to the strengths of relations as mentioned by participants (Özesmi and Özesmi, 2003) with 0 being the value of "no relation" (Elpiniki and Areti, 2012). These matrices were processed in the FCMapper Software Solution and the Fuzzy Cognitive Mapping Aggregator Vs 0.1 (Bachhofer and Wildenberg 2010. www.fcmappers.net).

environmental problems, trust and personal relations are also used to jointly circumvent existing environmental regulations. The natural resource base is so important for peoples' livelihoods, that the lack of capacity to address environmental degradation, is an important manifestation of limited resilience at municipal level.

2.3. Part Three – International Policy

In Chapter 10, we explore resilience at an international level, with specific attention for the role of aid in reconstruction, linking resilience to international policy. Based on a regression analysis of statistical data gathered from document databases, the chapter explicitly addresses both the contributions for aid and reconstruction in Lebanon,[12] and peoples' perceptions in the area, on the effectiveness of aid to areas that were affected by armed conflict.

In the final chapter, Chapter 11, we investigate the role of development aid in North Lebanon's post-war reconstructions and scrutinize the extent to which development aid to post-war reconstruction contributes to the region's coping capacity[13] to address the environmental effects of conflict. We argue that political deliberations substantially shape donors' allocation considerations. To explore the perceptions of both recipients and donors, we used Q-methodology to analyze their discourses in use.[14] These discourses were solicited in interviews with participants representing municipalities (recipients), non-

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[12] No figures are available for North-Lebanon for longer periods of time.

[13] One should question, though, to what extent donor aid has contributed to resilience. When the effects of donor aid are more structural (increasing the institutional capacity and human resources), one can answer this question positively. If, however, it results in donor dependency, it could achieve the opposite.

[14] For a detailed description of the methodology see Takshe et al. (2010). The method combines both qualitative and quantitative techniques to extract discourses in as subjective way as possible by structuring of opinions, judgements and understandings of risk.

governmental organizations, research centres, United Nations specialized agencies (intermediaries), national and international donors, and ministries. The Q-methodology allows us to demonstrate that overseas development aid per capita in Lebanon is positively linked to not merely GDP per capita, but also to the occurrence of armed conflict, which highlights the importance of political factors in aid allocation. We thereby question dominant claims that development aid is predominantly dependent on socio-economic development considerations. Moreover, our findings show that political motivations for allocating development aid are skewed towards some concerns, while disregarding others. While the number and intensity of measured violent conflict decisively determine aid flows, other crucial concerns – such as perceived corruption – do not.

3. CONCEPTUAL CONTRIBUTIONS

Our point of departure with this book has been to critically explore the conflict-environment nexus with an empirical focus on North Lebanon. Our contributions to academic knowledge follow from this.

Empirically, we have put North Lebanon on the map as a region meriting analysis in its own right – in this case of its vulnerability to conflict-induced natural dangers. The North is Lebanon's socio-economically most marginalized region. As a consequence of Lebanon's preoccupation with its original heartland in Beirut and Mount Lebanon, moreover, the area is often treated as a political periphery as well. This lack of interest has for a long time manifested itself in a relatively low number of scholarly publications on with North Lebanon (as compared to the Mountain and the South).

Often discussing concrete case-studies, our chapters have made clear that, even within this one region, exposure, sensitivity

and resilience vary per community, depending on spatial and socio-economic features. The diversity of the academic methodologies applied to our object of study – ranging from analyses of remote sensing data to the use of fuzzy cognitive mapping and participant observation – makes clear that vulnerability should not merely be measured, as in the traditional positivist approach to exposure, but interpreted as well, meriting a more innovative and constructivist approach to particularly the sensitivity and resilience aspects of vulnerability.

Our findings clearly indicate that, in many cases, armed conflict does not so much straightforwardly cause environmental risks, but exacerbates or reveals existing environmental issues. The bulk of the relations between conflict and environment, furthermore, even in an extremely conflict-prone setting like North Lebanon, are indirect. The effects of armed conflict on the natural environment are mediated by socio-economic and political institutions and so are the subsequent effects of these environmental hazards on society. It is in understanding these mediating variables – governance, institutions, relations – and incorporating them in our models or frameworks to analyse vulnerability, then, that our main conceptual contribution lays.

We argue that it is necessary to integrate lessons from the complex political reality as explored in detail in this book into our vulnerability approach, particularly where it regards the multiplicity of political authorities, the plurality of political institutions and the instability of political structures that we highlighted above. As such, our book does not only offer innovative analyses of the multifaceted relations between conflict, vulnerability and the natural environment. It also calls for a re-positioning of the notion of vulnerability in relation to state fragility and political hybridity.

This can be achieved, in large part, by making explicit the political economy dynamics inevitably implied in each analysis of vulnerability in conflict-affected situations. In our chapters, we have done this by demanding attention for three – out of many more possible – aspects of political economy. We have shown how *trust* and accountability, severely undermined by the same conflicts that generated the environmental risks in question, are crucial in addressing war-induced environmental problems. This is however, no clear-cut dynamic: trust and personal relations are used to create and bolster environmental regulations, but also to jointly circumvent them. Building on the idea of trust, we have also investigated in detail how the notion of a *social contract*, so essential in a situation where political institutions and authority are contested, determines the distribution of material and institutional resources and thereby variations in resilience. The importance of informal governance institutions – personal networks, *wasta*, corruption – also serves to illustrate the significance of political economy dynamics for understanding how communities are equipped to deal with natural hazards caused by conflicts.

In essence, what we found is that communities' vulnerability to the environmental effects of war in North Lebanon varied per community and that this variance depended not so much on spatial as on socio-political differences (between richer and poorer municipalities, between those communities with extensive political ties and those without). Based on these findings, we would encourage analysts interested in vulnerability to move away from the dominant emphasis on *exposure* (the extent to which a system is confronted with the hazard in question) towards more attention for *sensitivity* (the likely damage the hazard will do to these systems) and *resilience* (the coping mechanisms available to mitigate the impacts of hazard).

Often, it is not the extent to which a community is confronted with environmental threats that is determined by dynamics of conflict, but the likely damage such a threat will do to the community in question and the response mechanisms available to mitigate a threat. A focus on explicating the currency of informal and formal institutions shows that vulnerability to environmental problems depends on a particular institutional setting and it is this setting that, in a 'post'-conflict and fragile political order, is inevitably and importantly shaped by a multitude of violent conflicts. Even where war does not affect exposure to environmental risk, it crucially determines sensitivity and resilience. In this light, the fact that in our studies communal structures often seemed more important for determining resilience than individual empowerment logically reflects Lebanon's communal political system, where citizenship depends less on individual rights than on group membership.

Focusing on the conflict dimension of environmental hazards forces one to acknowledge the politics of vulnerability. While the conceptual linkage between environmental vulnerability and political economy explored here is still tentative, we would ultimately argue to reconfigure the place of 'politics' in the vulnerability framework, placing it in the centre rather than at the margins where it all too often is treated as 'context' instead of 'essence.' We should not only concern ourselves with the 'politics of environmental resources' as causes of violent conflict, but also with the politics of exposure, sensitivity and resilience that determine vulnerability to the environmental consequences of violent conflict.

Turner et al.'s authoritative vulnerability framework would gain much from incorporating insights from the state fragility and hybrid political order literature, just as the study of state fragility could be enriched by including notions of vulnerability. State fragility is, among other issues, concerned with how the

consequences of past violent conflict make countries prone to future violent conflict. What we have done in this volume, essentially, is explore one avenue through which this relation operates: we have shown how past conflict affects a country's vulnerability to natural hazards (whether these hazards are caused by that conflict or predate it), which, if we want to close the circle, in turn might generate susceptibility to future conflict.

The above, however, demands caution with regard to the celebration of resilience, as suggested in Chapter 3 as well. Informal trust relations, alternative social contracts and unsanctioned institutions can produce effective coping mechanisms in the short run. In the longer run, however, such instances of resilience risks reinforcing rather than overcoming existing vulnerabilities. Indirect, informal and politicized coping strategies can set strong precedents and authorities and donors might feel less pressured to move towards rights- and equity-based measures to boost resilience. This is particularly the case with reference to dynamics of international aid. While such aid can, of course, contribute to communities' resilience to the environmental effects of war, Part 3 of our book showed that the allocation of international aid is privy to political concerns just as the internal distributions of resources and social capital in Lebanon and in the North are. Lebanon's multiplicity of political authorities, plurality of political institutions and dynamism of political structures, ultimately, does not (only) determine how much aid it receives, but it does affect who receives this international aid on behalf of whom, again underlining the prevalence of community over individual in the dynamics that determine people's vulnerability to war-induced environmental threats in North Lebanon.

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CHAPTER 2

VULNERABILITY

A Review of the Literature[15]

Sahar T. Issa

Abstract: This chapter reviews the literature on vulnerability. Together with Chapter 3, that offers a literature review specifically focused on resilience, it lays the conceptual foundations for the empirical chapters in this edited volume. Vulnerability symbolizes the susceptibility of a certain system to the damage caused by a natural or man-made disaster and resilience is related to the capacity of this system to handle shocks and maintain its fundamental functions and structures. The operationalization of vulnerability poses several challenges to scholars due to its multidimensional and complex nature. As a result, definitions of vulnerability vary between different disciplines and even within the same discipline and diverse methodological approaches have been developed to assess vulnerability. This chapter critically reviews these various definitions of as well as theoretical and methodological approaches to the notion of vulnerability.

Keywords: Vulnerability, disasters, multidimensional operationalization

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1. INTRODUCTION

There is a close, direct, and complex linkage between the natural environment and human wellbeing. Environmental degradation weakens economic potential as well as human wellbeing and dramatically changes the living conditions of communities by rendering them more vulnerable (Dabelko and Dabelko, 1995). Environmental degradation can have numerous impacts such as health and economic problems as well as political instability. It can also lead to social issues that threaten individuals, families, communities, and social organizations (Khagram et al., 2003).

As such, negative changes in environmental quality multiply the potential for impoverishment, deprivation, and lack of empowerment, and hence increase vulnerabilities. As a result, some individuals or groups become more sensitive and less prepared for dealing with unexpected or increasing environmental changes (Matthew et al., 2010). Individuals who depend mostly on natural resources as their main source of income are commonly the most susceptible to environmental change (Matthew et al., 2010). In particular, the poor and impoverished people are often the most affected by environmental degradation for they are often heavily dependent on natural resources for their livelihoods (Kumar and Yashiro, 2014). On the other hand, a better environment offers opportunities for human wellbeing by improving chances of survival, enhancing human capacities, and increasing the recognition of basic rights (Khagram et al., 2003). In light of increasing occurrence of natural and man-made disasters and their consequent environmental degradation, measuring vulnerability becomes a necessary and key step in order to reduce disaster risk and promote a sustainable future.

In this chapter, I start by reviewing the literature on vulnerability encompassing the various definitions and meanings, and the various conceptual frameworks that are developed to

assess this concept. I then highlight the importance of building a culture of disaster resilience as an effective approach to reduce vulnerability and I conclude in the final section.

2. VULNERABILITY

Vulnerability is a highly debated concept but one that has been well covered in the literature (Timmerman, 1981, Cutter, 1996; Kelly and Adger, 2000; Bankoff et al., 2004; Wisner et al., 2004; Flint and Luloff, 2005; Schröter et al., 2005; Adger, 2006; Birkmann, 2006). The term vulnerability has proved difficult to define because it is a combination of several factors. Definitions of vulnerability vary between different disciplines and even within the same discipline depending on the various concepts and meanings that the researchers adopt as their starting point (Füssel, 2006).

2.1. Definitions

In the early 1980s, Gabor and Griffith referred to vulnerability as the "*threat to which a community is exposed taking into account not only the properties of the chemical agents involved but also, the ecological situation of the community and the general state of emergency preparedness at any given point in time*" (Gabor and Griffith, 1980:325). Timmerman defined vulnerability as the extent to which a system might adversely respond to the incidence of a certain threatening event. The extent and type of that adverse reaction are partially controlled by the system's resilience defined as the system's capability to absorb and recover from the incidence of a particular threatening event (Timmerman, 1981). According to Kates, vulnerability is the "*capacity to suffer harm or to react adversely*" (Kates, 1985:17). Later, Liverman defined vulnerability as *"the characteristics of places or people that are likely to be harmed by meteorological and geophysical events"* (Liverman, 1990:50). Kelly and Adger explained vulnerability as

the capability or otherwise of individuals and groups to react, cope with, or adapt to an external pressure affecting their livelihoods and wellbeing (Kelly and Adger, 2000:328). Turner et al. regarded vulnerability as the extent to which a system or part of a system is likely to suffer from threats caused by exposure to a certain perturbation or pressure (Turner et al., 2003), whereas Wisner et al. (2004) defined it as *"the characteristics of a person or group and their situation that influence their capacity to anticipate, cope with, resist and recover from the impact of a natural hazard"* (Wisner et al., 2004:11). Another definition of vulnerability is presented in *Mapping vulnerability: Disasters, Development, and People* where it is considered as "*an internal risk factor of the subject or system that is exposed to a hazard and corresponds to its intrinsic predisposition to be affected or to be susceptible to damage"* (Bankoff et al., 2004:37).

As the various definitions suggest, vulnerability symbolizes physical, economic, political, and/or social susceptibility of a certain population to damage that is caused by a natural or man-made disaster. Since this study examines the environmental impacts caused by armed conflicts in the coastal area of north Lebanon and the consequent effects on the communities' vulnerabilities in this area, vulnerability is defined here as the susceptibility of the communities of the coastal area of north Lebanon to environmental damage caused by episodes of armed conflict and their capacity to cope with threats or damage caused in that context. Vulnerability is multidimensional, differential, and scale-dependent and is usually associated with existing conditions that cause livelihood activities to be highly fragile for a certain population. It varies across time, geography, and among and within social groups. It is also dependent on the space and unit of analysis such as individual, household, region, and system. As such, the range of characteristics and driving forces of

vulnerability are dynamic and continuously change over time (Birkmann, 2006).

Vulnerability is often associated with terms such as hazard, risk, coping capacity, and resilience. A hazard is generally defined as a hidden threat or an external risk that can affect an exposed system or subject (Bankoff et al., 2004). It is often regarded as the probability that a certain event with a precise intensity will occur in a certain area during a particular period of time. Combining vulnerability and hazard creates risk, which is the potential loss experienced by an exposed system. Vulnerability and hazard are in a mutual relationship and neither can exist without the other. A system cannot be threatened if it is not vulnerable and vice versa: a system cannot be exposed if it is not threatened. Thus, if the elements of risk are affected, the risk itself is altered (Bankoff et al., 2004). Another two key terms associated with vulnerability are coping capacity and resilience. Coping capacity refers to the sum of the strengths and resources that are present within a community or institution that can minimize the level of threat or the impacts of the disaster (Birkmann, 2006). Vulnerability and coping capacity are manifested whenever vulnerable communities are exposed to a threatening experience. Resilience is related to the ability of a system to handle shocks and maintain its fundamental functions and structures. This implies that the system is capable of adapting and learning, and hence being sufficiently self-organized to sustain crucial structures and mechanisms within an adaptation or coping process (Birkmann 2006).

2.2. Themes in Vulnerability Research

The literature on vulnerability can be divided into three distinct streams when it comes to its causal structure. One theme views vulnerability in terms of the potential exposure to occurring hazards. This approach is illustrated in several studies (Quarantelli, 1992; Alexander, 1993; Douglas, 2007; Uzielli et al., 2008; Bertrand et al., 2010). Physical vulnerability assessments

often emphasize how hazardous conditions are distributed and the ways in which such circumstances can alter humans and structures.

A second approach identifies social vulnerability as a function of the underlying social conditions which are often detached from the initial hazard occurrence. Social vulnerability researchers treat exposure as a given, and seek forms of differential losses among affected communities. Studies that assess social vulnerability focus on understanding the ways in which communities are exposed to threats, and particularly on their potential coping capacity to resist as well as their ability to recover from the damaging impact of an event (Bohle et al., 1994; Adger, 1999; Dunno 2011; Tate, 2012; Yoon, 2012).

The third perspective, vulnerability of place, combines both biophysical and social approaches. Vulnerability of place is considered in terms of biophysical and social vulnerability, but is cantered on a specific geographic domain. Researchers that adopt this perspective, address vulnerability within a specific geographic area to determine the location of vulnerable people and places, or within a social place to identify which groups are most vulnerable in those places (Cutter, 1996; Boruff et al., 2005; Cutter et al., 2000; Cross, 2001; Cutter et al., 2008).

2.3. Conceptual Frameworks of Vulnerability

The various definitions of vulnerability are also accompanied by a similar diversity of assessment methodologies, such as participatory, indicator-based, and simulation-based approaches, which are applied to various systems and on diverse spatial and temporal scales (Birkmann, 2006; Hinkel, 2010). In reality, the scientific definitions offer little guidance on designing methodologies to assess vulnerability. In general, definitions are operationalized in ways that reflect the generalities of the terms used and this results in methodologies that are loosely connected to the theoretical operationalized definitions (Hinkel, 2010).

Therefore, in operationalizing definitions and designing methodologies for vulnerability assessment, normative choices have to be made. The key to assessing and understanding vulnerability is to determine who are the vulnerable individuals and/or groups, to what threats they are vulnerable and where, and how various factors interact leading to either attenuation or amplification of vulnerability. Thus, vulnerability can be studied to highlight the influence of numerous factors on the wellbeing and livelihoods of the entities of analysis. It is also important to examine the ways in which responses to one factor can increase or decrease vulnerability to other factors and how interventions affect both present and future outcomes (Turner et al., 2003; O'Brien et al., 2009).

As observed earlier, there are diverse approaches and methods used to assess vulnerability. From a risk and hazard perspective, the risk-hazard model (RH) has been used to assess the risks to particular components that result from their exposure to hazards of a certain type and scale (Kates, 1985). This approach is descriptive rather than explanatory and is often used in the technical literature on disasters. The risk-hazard model is usually used to examine physical systems such as the built infrastructure and distinguishes between two features that determine the risk to a certain system: hazard and vulnerability. A hazard is seen as a potentially harmful physical event and is viewed in terms of intensity, frequency, location, and probability; vulnerability is seen as the association between the severity of the hazard and the extent of the damage resulting from such an event (Füssel, 2006).

This approach is hard to apply to humans because their exposure to hazards is largely determined by their behaviour which is influenced by various socioeconomic factors (Füssel, 2006). Another model that stems from the risk-hazard approach is the pressure-and-release (PAR) model (Figure 2.1). This explanatory model encompasses the global root causes, regional

stresses, and local susceptible conditions (Wisner et al., 2004, Füssel, 2006). According to Wisner at al. (2004), the root causes that contribute to vulnerability are primarily the economic, demographic, and political structures that often influence resource allocation and distribution among groups and individuals. Further, the root causes are linked with the functions of the government and military actions (Wisner et al., 2004). Despite this model exploring the processes that can influence vulnerability, it fails to explicitly consider the significance of place and geography and, as with other vulnerability approaches, only emphasizes the interconnections of negative processes during catastrophic events and disregards capacity building, which can be inherently disempowering (Joakim, 2008).

The political economy approach primarily assesses people's vulnerability by identifying the vulnerable individuals or groups and the factors that contribute to their vulnerability (Kelly and Adger, 2000). In this approach, vulnerability is conceived in terms of the coping capacity of individuals, groups, and communities and their adaptation to external pressures that affect their livelihoods and wellbeing. Here, the availability of and access to resources are considered the main determinants of vulnerability (Füssel, 2006). The political economy approach is dominant in the literature on poverty and development.
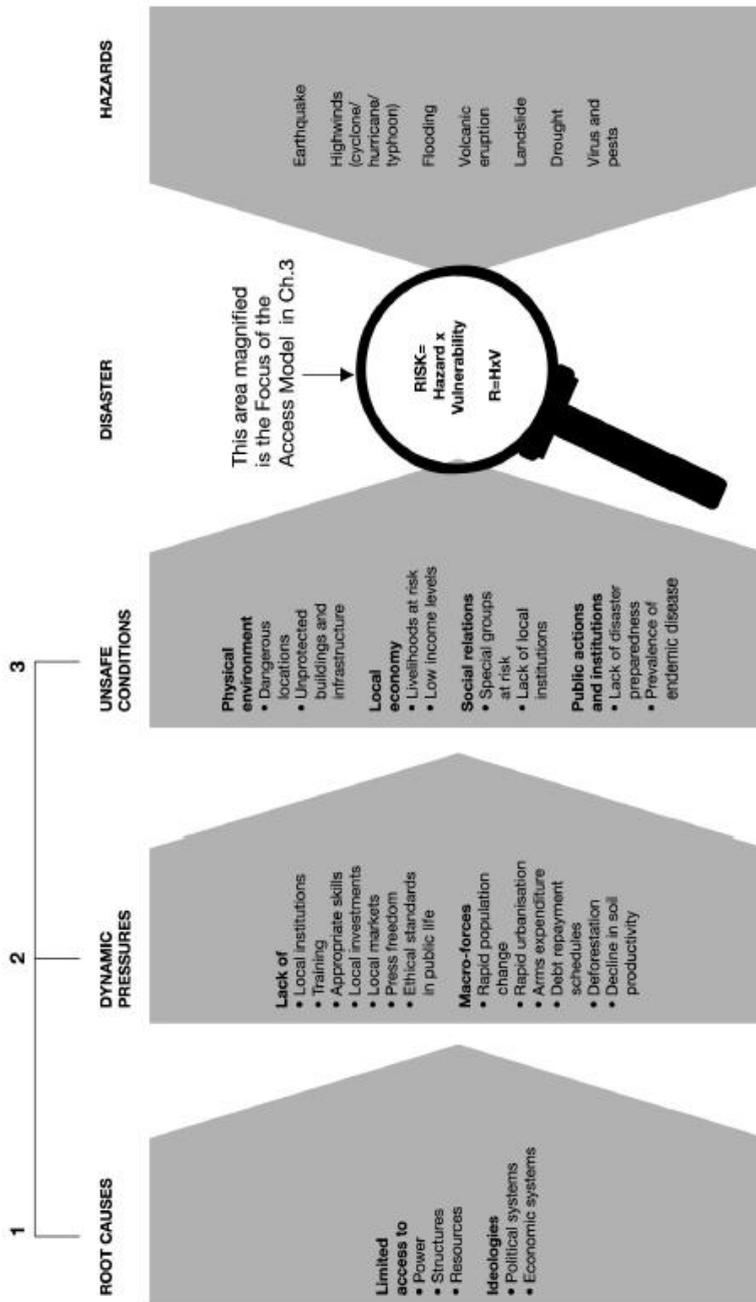
Figure 2.1: The Pressure and Release (PAR) Model (Source: Wisner at al., 2004:51)

According to Bohle (2001), vulnerability can be regarded as a two-sided concept with both external and internal sides. The external side includes exposure to risks and threats while the internal side is associated with the capacity to anticipate, deal, resist, and recover from the impact of a certain disaster (Bohle, 2001). From the social geography perspective, the double structure of vulnerability depends on distinguishing between the exposure to external risks and the capability of the household, group, or society to deal with them. Bohle's conceptual framework emphasizes the physical aspect, characterized by the exposure to threats and perturbations as a key component of vulnerability, and the fact that vulnerability cannot efficiently be characterized without simultaneously considering coping and response capacity (Figure 2.2).
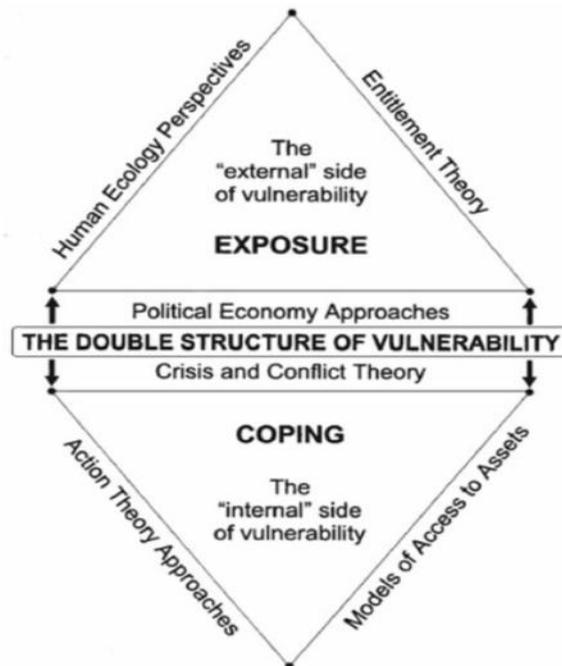
Figure 2.2. Bohle's Conceptual Framework (Source: Birkmann, 2006:20)

The 'sustainable livelihood framework' approach to vulnerability assessment relies on five key capitals: human, natural, financial, social, and physical. This approach was originally developed by Chambers and Conway (1991) who regarded livelihoods in terms of the capacities, assets, and actions that are necessary to secure a means of living (Chambers and Conway, 1991). Within the sustainable livelihood framework, the context of vulnerability is regarded in terms of shocks, trends, and seasonality, as well as the effect of changing structures on livelihood strategies and their outcomes. In this context, sustainability is explained in terms of the capacity to cope with and recover from perturbations while sustaining the natural resource base. The framework emphasizes that changing structures in the governmental system or in the private sector, and their processes, influence the vulnerability context by having major influences on and controlling access to the livelihood assets of people (Chambers and Conway, 1991; DFID, 1999).

The sustainability approach highlights empowering local marginalized people as an effective means of reducing vulnerability (Figure 2.3). As such, it is crucial to consider the daily needs of people and communities, rather than simply applying general interventions without recognizing the different abilities offered by vulnerable people. Within the sustainable livelihood framework, access is a fundamental component, and this largely depends on the status of social relations. As such, a greater emphasis should be placed on the role of power relationships in sustainable livelihood research (Birkmann, 2006).
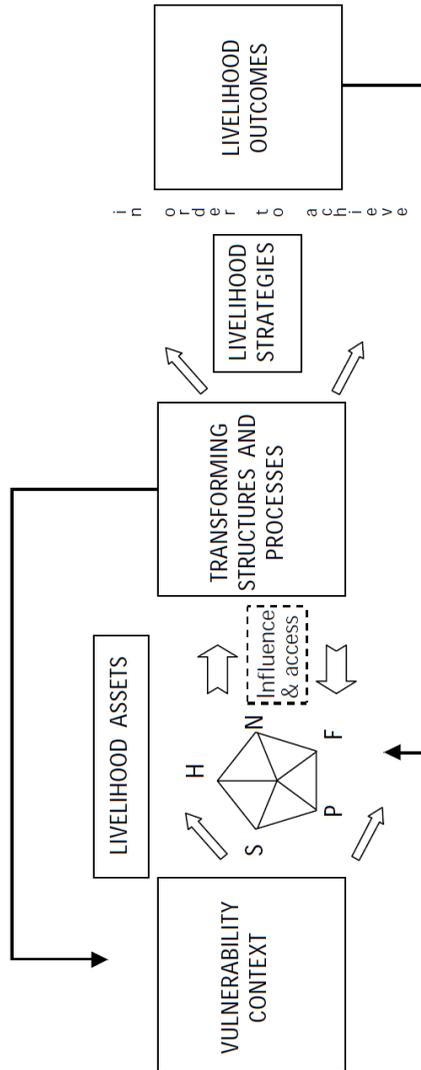
Figure 2.3: The Sustainable Livelihoods Framework (Source: DFID, 1999)

Turner et al. (2003) developed a conceptual framework to assess vulnerability. The framework regards vulnerability in terms of exposure, sensitivity, resilience, and coping capacity within the context of the human-environment system. In addition, this approach considers the various interrelating perturbations and stresses as well as adaptation, which is conceived as an important component that increases resilience (Figure 2.4).
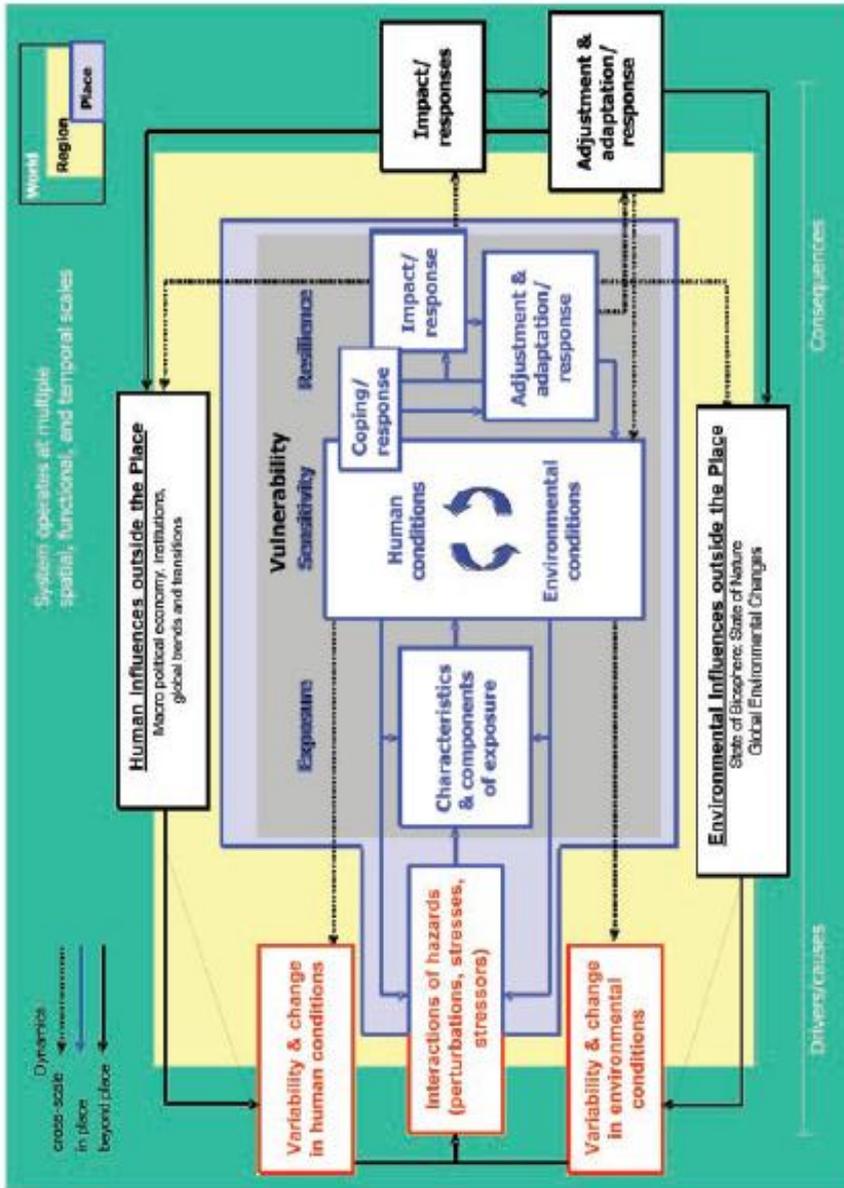
Figure 2.4: Turner et al. Vulnerability Framework (Source: Turner et al.:8076)

The various approaches and frameworks developed to study vulnerability incorporate both social and physical characteristics, but these are generally presented as distinct and independent processes (Joakim, 2008). Further, there was a trend visible in the literature toward an increasingly detailed examination of the social aspect of vulnerability, with physical and environmental vulnerability consequently becoming somewhat neglected. In an attempt to incorporate both the physical and social dimensions of vulnerability, and to recognize the complex interactions between them, Cutter started to develop the 'hazards of place' model in the 1990s to give a comprehensive understanding of vulnerability by combining the social and physical aspects while emphasizing the importance of place (Cutter, 1996; Cutter et al., 2000; Cutter et al., 2003) (Figure 2.5).
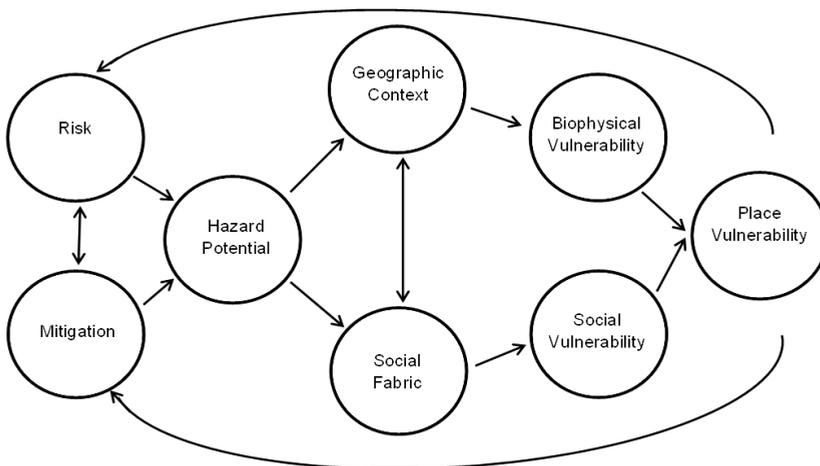
Figure 2.5: The 'hazards of place' model (Source: Cutter, 1996:536)

3. FROM VULNERABILITY TO RESILIENCE

The concept of resilience represents, in its core, the relationship between the natural environment and the society, particularly the socio-ecological system's response to disturbances and pressures in order to preserve its functionality (Folke, 2006). There are

different interpretations of the term resilience in the current literature (Gall, 2013). In some cases, resilience is regarded as the capacity to take in shocks or stresses and is therefore more related to resistance. In other cases, resilience indicates the regenerative capabilities of a certain system including the capability to cope with and adapt to cumulative changes and unforeseen shocks while sustaining its main functions. This interpretation of the term is more linked to the coping and adaptation stage (Birkmann, 2006). Resilience is also seen as the contrary of vulnerability or as the contradictory or absence of human security (Birkmann, 2006).

The old dominant viewpoints have indirectly supposed a steady and considerably resilient environment where resource flows might be restrained and nature might self-adjust its equilibrium when human pressure was removed (Folke, 2006). Such perspectives of static equilibrium centre offer little understanding of the transitory behaviour of imbalanced systems. In contrast, the resilience viewpoint shifts policies from an aspiration to control any alteration in assumed steady systems to the management of systems' abilities to handle and adapt to change. Working towards resilience increases the possibility of sustaining prosperity and development in fluctuating and unpredictable environments (Folke, 2006). It is argued that significant social effects might be caused by even minor disturbances in a vulnerable system; whereas in a resilient system, disturbances can help to generate opportunities for improvement and development (Adger, 2006). Thus, in view of increasing occurrence of natural and man-made disasters and ongoing environmental degradation, measuring vulnerability is progressively being regarded as a crucial step for reducing disaster risk and for fostering a culture of disaster resilience, in order to promote a more sustainable world (Birkmann, 2006).

Enhancing people's resilience relies in tackling the factors that cause their vulnerability. Enhancing the variety and security

of their livelihoods increase their options and opportunities, whether in their choice to live or work in other regions that are less exposed to threats, or in having more resources to exploit in order to deal with and rebound when affected by disastrous events (Pasteur, 2011). Hazards and stresses preparedness can considerably reduce exposure. A better understanding of long term trends allow people to exploit their available resources in proper manners in order to adjust to such alterations over time. Finally, generating a more empowering governance environment will enable people to become capable to access or influence decision-making processes, services delivery, and resource distribution (Pasteur, 2011).

4. CONCLUSIONS

As a conclusion, vulnerability is a highly debated concept that integrates various academic disciplines, concepts, and methodologies. The various approaches and frameworks developed to study vulnerability often look at the physical and social dimensions of vulnerability as distinct and independent processes. There was a trend visible in the literature toward an increasingly detailed examination of the social aspect of vulnerability, with physical and environmental vulnerability consequently becoming somewhat neglected. For instance, the risk-hazard model (RH), the pressure-and-release model (PAR), and Bohle conceptual framework focus mainly on the physical dimension of vulnerability and disregard the coping capacity, which is an important component of vulnerability. On the other hand, the political economy and 'sustainable livelihood framework' approaches focus on the social dimension and disregard exposure to a certain event. Further, even though the framework developed by Turner et al. considers the various interrelating perturbations and stresses as well as adaptation, it

fails to explicitly consider the significance of place and geography. In addition, while the hazards of place model provides an innovative approach by combining both the physical and social dimensions of vulnerability and recognizing the complex interactions between them in a certain geographical area, this model remain too general and comprehensive.

Overall, the various frameworks and approaches reveal the varying, complex, and multidimensional nature of vulnerability. Measuring vulnerability and creating a culture of disaster resilience are being increasingly regarded as vital step for reducing disaster risks and for promoting a more sustainable world in a time of augmenting occurrence of both natural and man-made disasters and current environmental changes. Promoting sustainable development also emphasizes the need to highlight the importance of the natural environment for humans and to protect the natural environment since that the priority is generally given to saving lives and minimizing human suffering, in times of violent conflict. As such, the emphasis tends to be on immediate, direct, and short-terms needs; while environmental concerns and indirect impacts are often neglected and viewed as of secondary importance (Shambaugh et al., 2001). However, even if it appears not unreasonable that environmental concerns are regarded as low priority in times of armed conflict and human emergencies, the heavy impact of environmental changes on communities' vulnerability and resilience highlights the importance of giving the natural environment a high priority (Shambaugh et al., 2001). Here, it is important to stress that a degraded environment threatens future livelihood security and increases humans' vulnerabilities (Shambaugh et al., 2001).

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CHAPTER 3

RESILIENCE

A Review of the Literature: Queries Beyond the Promise?[16]

Georg Frerks

Abstract: Building on Chapter 2, that explored the definitions and conceptualizations of vulnerability at large, this chapter offers a critical exploration of the concept of resilience and thereby contributes to providing the conceptual foundations for the following chapters. Focusing in particular on the fields of environmental management and disaster studies, the chapter welcomes the notion of social resilience as a way to go beyond the capacities of the formal disaster management sector; bring political and policy dynamics into assessments of resilience; and address potential disempowering effects of the vulnerability notion. Including political economy indicators into our analysis of resilience, however, also demands a problematization of straightforward resilience promotion and merits a deconstruction of the claims of retreating neo-liberal states that everyone can be equally resilient.

Keywords: Resilience, environmental management, disaster studies, policy and politics

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[16] This chapter is derived from Frerks (2014) and Frerks, Warner and Weijs (2013).

1. INTRODUCTION

The notion of resilience has rapidly gained popularity in the field of environmental management, disaster studies and emergency management. Improving the resilience of individuals, communities and societies is thought to be an effective and efficient way to reduce prevailing vulnerabilities and thereby the risk of disaster, whether in the field of the environment, the economy, development or socially or politically.

The advantage of strengthening resilience is that it can be seen as an 'all-hazard' approach killing several birds with one stone. It is a medicine for many ills. If you have become 'resilient', you can withstand floods, storms, high interest rates, inflation, social indifference, environmental damage and political arrogance. Resilience seems to have been embraced as the new catchword for the decade to come and at present there is an avalanche of initiatives, workshops and publications on the subject, very much like happened to the notion of vulnerability that dominated the disaster discourse in the 1990s.

In a recent ODI Background Note Tom Mitchell (2012:2) discusses various options for including disaster resilience in post-2015 development goals, including a 'standalone goal on disaster resilience' or a 'mainstreaming approach' incorporating the theme in other sector-oriented goals.

On the other hand, the ascendancy of resilience has also attracted serious criticisms. For example, Ben Aguirre and Eric Best (2015) consider the current widespread usage of the concept of resilience just a 'fad', and in fact redundant when applied to research and management of disasters, as the strengthening of the institutions of society faced with disasters has been already ongoing practice for half a century, they state. While taking a much less radical stance, Kathleen Tierney, also observed several fundamental weaknesses with regard to the resilience approach in

a keynote delivered on the subject.[17] While acknowledging its stimulating force in policy, she wondered whether the concept was really innovative or rather 'old wine in new wineskins' and whether it comprised a sufficiently deep analysis of root causes. She, among others, further critiqued its under-theorization of power and claimed that there was a need to focus much more on the 'pathologies of power' that generated wide-spread vulnerabilities in society, including different forms of policy denial and denigration of initiatives in the face of an unsustainable future. By just jumping over those shortcomings, resilience can never fully address the factors that cause patterns of vulnerability in the first place.

So what to think of the strengths and weaknesses of resilience? Below I give first an overview of the resilience concept and approach and then discuss its significance in terms of policy and politics. Summing up my arguments at the end, I try to conclude what the resilience approach can contribute.

2. THE ASCENDENCY OF RESILIENCE IN DISASTER STUDIES AND ITS DEFINITION

Since the 1990s the field of Disaster Studies has taken on board some ideas from environmental systems analysis. Resilience being one of them was based on the work of the ecologist Holling. Holling defined resilience as "the ability of a system to maintain its structure and patterns of behaviour in the face of disturbance" (Holling, 1986:296). The envisaged stability is the "propensity of a system to attain or retain an equilibrium condition of steady state or stable oscillation ... resist any departure from that

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[17] Keynote Kathleen Tierney, 3rd Conference on Community Resilience, organized by The Center for Community Security and Resilience, Virginia Tech, Arlington, USA, in collaboration with the Metropolitan Institute, Congress Center, Davos, Switzerland, 24-25 August 2012.

condition and, if perturbed, return rapidly to it" (Holling, 1986:296). It is clear that this ecological line of thinking departs from a strong sense of equilibrium and aims at a restoration of the original situation.

However, in disaster management as well as in socio-political and economic 'systems', this re-equilibricizing trend may not be desirable, as the earlier situation was often characterized by vulnerabilities that enabled the disaster or problematic situation occurring in the first place. That earlier situation should preferably be transformed and not reinstated.

In disaster research, the definition of resilience initially meant the ability to survive and cope with a disaster with minimum impact and damage. However, it was slowly further expanded to include additional social and institutional aspects. Harrald and Veldhuis (2010) provide an overview of the recent debate on resilience in the United States (US) and include a series of definitions in use by US departments and in academic literature. Box 1 provides three of them showing an increasing complexity.

Box 1. <u>Definitions of resilience</u>

Community resilience "is defined as the sustained ability of communities to withstand and recover - in both the short and the long terms - from adversity" (U.S. Department of Health and Human Services, 2009: 5).
"Resilience refers to the ability of human systems to respond and to recover. It includes those inherent conditions that allow the system to absorb impacts and cope with the event, as well as post-event adaptive processes that facilitate the ability of the systems to recognize, change and learn in response to the event" (Cutter et al, 2008).

Resilience is "a process linking a set of adaptive capacities to a positive trajectory of functioning and adaptation after a disturbance. Community resilience emerges from four primary sets of adaptive capacities – Economic Development, Social Capital, Information and Communication and Community Competence" (Norris et al, 2008).

(Derived from Harrald and Veldhuis, 2010: 9-10)

These definitions emphasize the capacity or ability to anticipate risk or disturbance, absorb or limit impact, and bounce back after a crisis but -more importantly- they include adaptive community capacity, and processes of change, as evidenced in the definitions of Cutter et al (2008) and Norris et al. (2008). It must be stressed that these capacities and abilities mentioned are not some mysteriously in-built systemic property of individuals or organizations, but are based on interactive and contingent community-level and societal processes involving change, entrepreneurship, learning and increased competence. Hence, these definitions move far beyond the ecologists' traditional equilibrium thinking. In that sense resilience does not need to be only a return to a previous equilibrium, but can aim at a different, improved state of affairs.

In effect, the current debate about disaster rehabilitation asserts that rather than 'building back' we should be 'building back better', giving disaster survivors more capabilities, options and flexibility in their coping with future adversity, and also making progress by structural vulnerability reduction and the increase of institutional capabilities. In this connection, the strength of an effective resilience approach is that it is ideally human-centred and community-focused, but simultaneously situated in a larger macro-setting of environmental, macro-

economic and policy processes and cognizant of global-local dynamics. It is also interdisciplinary and multi-layered, requiring new forms of stakeholders' engagement and public-private partnerships.

One critique on the earlier vulnerability approach in disaster management pointed out that it victimized and disempowered people. It would engender a fatalistic and passive outlook and take away the agency from people, thereby creating external dependency. In fact, vulnerability was and still is often externally attributed to groups of people, who rarely label themselves as vulnerable. Anderson and Woodrow (1989) highlighted already two decades ago that people have important physical, social and motivational capacities that can offset their vulnerabilities. Accordingly, the vulnerability approach increasingly paid attention to (individual, group or community-level) coping capacities that came to be seen as a major counter force to vulnerability as exemplified in a variety of vulnerability and capacity analysis (VCA) tools that emerged in disaster policy practice. Cannon, Twigg and Rowell (2003) have made an inventory of over fifty instruments that deal with such vulnerability and capacity aspects.

The thinking on local disaster capacities has sociologically been further influenced by debates on actor-orientation and the role of agency. Actor-orientation is a constructivist perspective focusing on the making and remaking of society through the self-transforming actions and perceptions of a diverse and interlocked world of actors (Long, 2001). Actor-oriented approaches form a counter-balance to approaches that basically see human behaviour as externally determined.

In relation to earlier paradigms in disaster studies the resilience approach moves beyond the vulnerability and victimization discourse towards agency and capacity, and from

short-term coping towards longer-term adaptation and innovation. It focuses on process rather than being a static state of affairs, as evidenced in the definitions referred to above. It also changes from mere adaptation to what can be called a transformative approach. This implies that it includes response and coping, but simultaneously goes beyond it and is also more geared to social and systemic aspects of dealing with disaster rather than only to individual and household capacities. In this connection Dovers and Handmer (1992) have proposed to differentiate between proactive and reactive social resilience. Reactive resilience seeks to perpetuate and reinforce the status quo, whereas a proactive system accepts change and adjusts to it.

3. RESILIENCE AS A POLICY APPROACH

Turning to the policy world, it seems to make sense to invest in resilience in view of its merits outlined above. This explains that the concept is embraced by i.e. the Government of the United States, the European Union, several donor agencies and government departments in a variety of countries. On the other hand, there is as yet fairly little insight in how to translate resilience into a workable concept and policy approach. We need more substantive work on the operationalization of the concept and its use in policy practice. The resilience approach is associated with a clear shift in responsibilities and roles in public disaster policy and with regard to the composition of the actor alliances involved. In the field of disaster management collaboration between authorities and citizens was already promoted in the 1994 Yokohama and 2005 Hyogo frameworks.

It is however necessary to ascertain the impacts of such policy shifts on the anticipation and prevention of, and recovery after shocks. As grassroots or community-based perspectives have often been welcomed merely on ideological grounds or 'feel-

good' sentiments, it is essential to provide for a critical and evidence-based framework to inform policy and practice on resilience initiatives and enhance their effectiveness. Such a framework should include: a) a further definitional delineation and conceptual elaboration of resilience, building on the ample literature that exists today; b) define descriptive-analytical benchmarks or indicators for resilience (also here much work is ongoing already); c) collect empirical evidence on the application of the resilience approach in practice or work with pilot cases (this evidence is still weak); d) analyze the larger policy and political context and its impact (see my remarks below) and e) propose policy measures to enhance resilience.

Though such steps can help and promote community and societal resilience in disaster-prone or environmentally fragile areas, there still remains a need to critically approach the resilience paradigm. Whether or not such interventions may have a beneficial impact in terms of risk governance and the target population also depends on the broader political and economic context, as already mentioned by Tierney in her keynote referred to above. Therefore I suggest that alongside the policy work outlined above, a more politically informed analysis takes place that looks at and deconstructs the resilience discourse as a political project.

4. RESILIENCE AS A POLITICAL PROJECT

What are in effect the political underpinnings of the resilience approach? It can -in my view- be considered as part of the larger neo-liberal project that is taking hold of contemporary society. In terms of (risk) governance it relates to a model that includes parliamentary democracy, a liberalized economy with a retreating state, and western model of security provision based on the securitization of certain external threats. Some authors have

claimed that this neo-liberal ordering of the world has led on the one hand to an interventionist attempt to govern and control parts of the globe, implying the erosion of civil rights and liberties, while on the other hand it is excluding and marginalizing those people deemed useless, who have been called the 'insecured' or 'surplus life' (Duffield, 2007) or 'wasted lives' (Bauman, 2004).

The emphasis on resilience indeed seems to be the product of a political discourse that seeks to shift the responsibility for mediating the impact of disasters from the state to the society and therefore may engender the same problems and feelings of disenchantment as the neo-liberal project creates in other societal domains and the economy at large.

Reid (2010) suggests that 'the resilient subject is a subject which must permanently struggle to accommodate itself to the world". By doing so resilience backgrounds the political, the imagining of alternatives and foregrounds adaptivity, accepting "the imperative not to resist or secure themselves from the difficulties they are faced with". Coaffee and Rogers (2008) claim that the notion of social resilience has been instrumentalized, leading to a new governance and policy structure exerting domination and causing inequality. They talk in this connection about a 'dark side' to resilience planning. In a recent keynote speech[18] Duffield observed that the resilience project approach under the neo-liberalist project in late capitalism in fact amounts to a form of adaptation, avoidance and working around a fragmented world in crisis, …. to an endless adaptation or *bricolage* without offering a solution. According to Duffield resilience thus boils down to 'surviving at the edge of extinction', or to 'living on the ruins'.

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[18] Keynote by Mark Duffield at Conference 'Remote Control, Violence, Containment, Technology', organized by the Centre for Conflict Studies and Centre for the Humanities, Utrecht University, 12 December 2014, Utrecht.

Though those warnings help us to focus on potential risks and dangers resulting from the political context, the ultimate test of the resilience approach lies in what it achieves in practice. As I said above, evidence is still largely absent or patchy and hence, the jury is still out.

5. CONCLUSION

In recent years, resilience has rapidly become a mainstream notion as a useful addition to hazard and vulnerability. The concept of social resilience focuses our minds on the social capacities available well beyond the capacities of the formal disaster management sector, and is also redressing the victimizing and disempowering effects of the vulnerability notion. While having a number of strong points, the resilience project also carries risks to society. Whether promoting resilience reduces people's vulnerability to disaster is highly dependent on a person's socioeconomic standing. Here, a more differentiated approach is called for than the current generalized one to promoting resilience implies. In this connection, we should be critical about the fiction promoted by the retreating neo-liberal state that everyone can be equally resilient. We have to study the potential negative political effects the neo-liberal project inheres in order to fully gauge its impact on vulnerable disaster-stricken individuals and communities, and how it may affect the governance of risk ultimately.

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CHAPTER 4

NORTH LEBANON

Bio-Physical, Social, Economic and Political Features of the Study Area

Manal R. Nader, Shadi Indary and Manal Abou Dagher

Abstract: Where the previous two literature review chapters have set the scene for the subsequent empirical chapters in a conceptual sense, this Chapter 4 does so in a regional sense. In the introductory Chapter 1, we defined vulnerability as the susceptibility of particular communities or systems to specific risks and hazards. We argued that three components are essential in the analysis: *exposure* (the extent to which a human or biophysical system is confronted with the risk or hazard); *sensitivity* (the likely damage the conflict will do to these systems); and *resilience* (the coping or response mechanisms available to the systems to mitigate the impacts of conflict). In this chapter, we describe features of the human and bio-physical system, with a focus on those features that are most relevant in the context of North-Lebanon's coastal area. These include the administrative division; information on meteorological settings, on precipitation, air temperature, wind and waves; information on tectonic setting and seismicity; fresh water; continental shelf and bathymetry; sea currents and sea water salinity; sedimentary processes and marine and coastal biodiversity. It also includes information on the 'human' system: the socio-economic features such as demographic features, economic features, information on the industrial sector, the energy sector, the tourist sector, transport sector, agricultural fisheries; waste water and solid waste management. The chapter also provides information on

environmental problems in the area, such as sea-filling, fresh-water contamination; saltwater intrusion into underground aquifers; erosion due to sand and pebble extraction and damage to the marine environment.

Keywords: Integrated coastal zone management

1. NORTH LEBANON

Lebanon is divided into six administrative regions called Mohafaza which are further subdivided into 25 districts called Caza made up of several cadastral zones except for the Mohafaza of Beirut. The Mohafaza of North Lebanon is the second largest in the country with a surface area of 2,025 km2
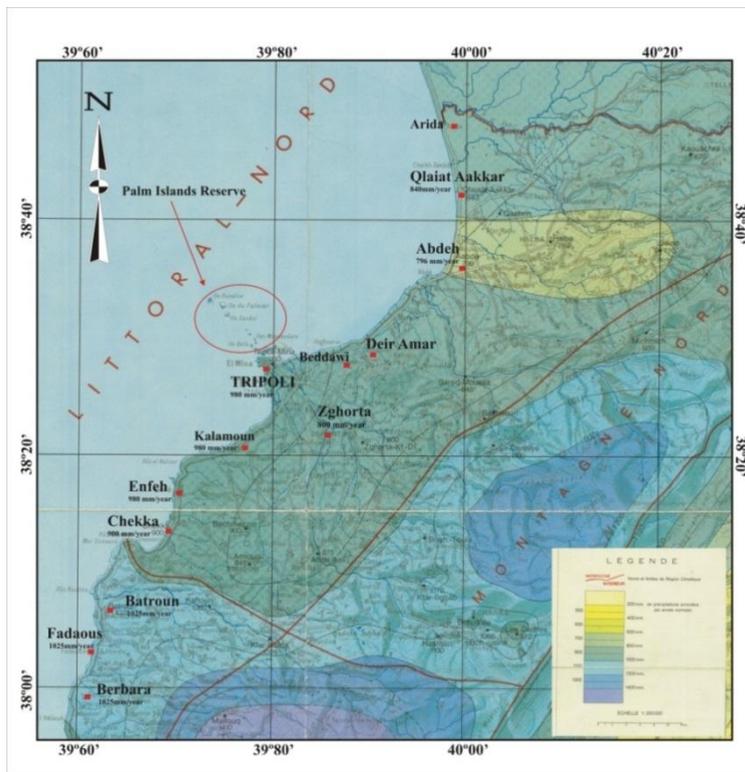
Figure 4.1. Map of North Lebanon

Most of Lebanon's population is concentrated on its Coastal Zone. In its most recent estimations, the Central Administration for Statistics (CAS) has projected Lebanon's population at 4 million in 1997 and projected it to be 4.3 million by the year 2002 with 80% living in cities on the coast. This number is expected to increase leading to conflicts over the use of coastal resources (IOE, 2007 a).

The coastal area of North Lebanon extends over 100 km representing 40% of the entire Lebanese coast (Abou Dagher *et al.*, 2012; Mitri *et al.*, 2012). The area encompasses 24 cities and villages distributed among five areas: Akkar, Menieh, Tripoli, Koura, and Batroun (Figure 4.1). The northern areas are largely agricultural, whereas the southern part of this coastline is characterized by urbanized areas with a number of large cities such as Tripoli and Batroun.

The population of north Lebanon is estimated to be around 764,000 inhabitants, representing 20% of the total population of Lebanon (CAS, 2007). The north of Lebanon is considered to be the poorest and most deprived part of the country, housing 46% of the extremely poor population and 38% of the overall poor (El-Kak, 2000; Das & Davidson, 2011). In addition, this region is marginalized and has been historically neglected by the Lebanese Government that focuses mainly on the capital Beirut and its suburbs (Volk, 2009).

2. PHYSICAL AND BIOLOGICAL CHARACTERISTICS OF THE COAST OF NORTH LEBANON

The Lebanese coastline is about 220 km long along a north-south axis in the eastern Mediterranean.[19] The coastline is punctuated by 12 prominent headlands. The sea cliffs are normally associated with wave washed terraces that show typical erosion patterns with potholes, blowholes and narrow channels. About 20% of the coast is reported to be sandy with some gravel on the landward side. The longest sand beaches are those found on the last 16 km in northern Lebanon. Other prominent sand beaches and dunes are found south of Beirut extending to the airport zone.

The Northern coastline constitutes around 41% of the total Lebanese coast with 100 Km and includes 3 bays, Chekka, El Qualamoun and El Abdeh along with two main headlands at Ras-Al Shaqaa and Tripoli and a variety of river deltas as well as the Palm Island Nature Reserve (PINR). The coast is sandy or pebbly with typical rocky terraces covered with molluscs such as *Vermetus triqueter* and *Dendropoma petraeum*, which represent an important feature of this coast. This ecosystem enjoys a high rate of biodiversity and functions as an important wave barrier protecting the coastline from erosion. Some of the sandy beaches and sand dunes throughout the coast have been lost to development and urbanization.

The Ramsar Convention on Wetlands of international importance listed three Lebanese coastal sites with two located along the coastal zone of North Lebanon, the Promontory cape

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[19] This distance is quite controversial since many discrepancies occur among various sources and it is said that the Lebanese coast has currently reached an unprecedented 300 km length due to sea filling activities through the years of war.

and cliffs of Ras Shaqaa and PINR. Since the Ramsar Convention defines wetlands as "Areas of marsh, fen, peat land or water, whether natural or artificial, permanent or temporary, with water that is static or flowing, fresh, brackish or salt, including areas of marine water the depth of which at low tide does not exceed six meters", existing Salinas and the numerous river valleys and estuaries of the northern Lebanese coast should also be considered as potential Ramsar sites in need for protection (United Nations Environment Programme (UNEP) and Lebanese Ministry of Environment (MOE), 2013a; Appendix I, II). In addition, cultural and archaeological sites along the northern Lebanese coast are numerous (Appendix I) and require protection from urban sprawl (Appendix III).

2.1. Meteorological Setting

The climate of the Lebanese coast is of Mediterranean subtropical type, where summers are hot and dry, and winters are mild and wet. On the other hand, snow covers the mountains of the two ranges for several months per year (MOE and United Nations Development Programme (UNDP) and ECODIT, 2011).

Precipitation patterns show large seasonal variations with more than 80 % of the annual rainfall typically occurring between October and May. The two mountain ranges of Lebanon are perpendicular to the path of atmospheric circulation. They intercept humidity and receive high rainfall compared to areas with similar locations. In general, the northern coastal zone is subject to relative high rainfall throughout the year due to location of the highest intercepting mountains in North Lebanon. The average annual rainfall recorded on the northern coast is 980 mm/year compared to an average of 887 mm/year in Beirut (IOE, 2007 a).

The mean temperature along the northern coastal plains is 26.7 °C in summer and 10° C in winter with a temperature

gradient around 0.57 °C per 100-m altitude (Blanchet, 1976). January is typically the coldest month with daily mean temperatures falling to -4 ℃ in the mountains and 9.3 ℃ in Tripoli. The warmest months are July and August, when mean daily temperatures can rise to 22 ℃ in the mountains and 27 ℃ on the coast (IOE, 2007 a; FAO-AQUASTAT, 2008).

Strongest winds are generally observed during the fall season. On the national level, wind data is available at several but limited stations. Since the Mohafaza, and specifically the coastal zone area covers a wide range of settings, some variations may occur over various sites. The dominant wind in Lebanon has a southwest, continental east and southeast direction. Its speed is reduced due to the Mount Lebanon range which exerts a big influence on wind direction (Table 4.1).

Year	2001	2002	2003	2004	2005
Wind speed km/h	26.9	27.3	29.3	27.9	24.3

Table 4.1: Data of wind speed at the Tripoli Weather Station from 2001 to 2005 (Source: Tripoli Environment and Development Observatory (TEDO) Report, 2006)

Month	2001	2002	2003	2004	2005
Minimum wave height in cm	23.7	22.1	25.5	22.2	27.7
Maximum wave height in cm	98.7	96.7	101.9	97.6	102.2
Average in cm	59.1	59.4	63.7	59.9	64.9

Table 4.2: Wave height recorded at the Tripoli Weather Station from year 2001 to 2005
(Source: TEDO report April 2006)

Coastal wave environments reflect to a large degree the climatic conditions of the region and may influence significantly coastal development. Information on coastal wave height, length and period is scarce in Lebanon. The TEDO, nevertheless, has been keeping such records for the Union of Municipalities of Fayhaa that will also allow the elucidation of the general direction of coastal currents Mohafaza (Table 4.2).

2.2. Tectonic Setting and Seismicity

Lebanon is located on the eastern coast of the Mediterranean Sea, along the Dead Sea Transform fault system (Figure 4.). This fault system in Lebanon has several surface expressions represented in major faults (Yammouneh, Roum, Hasbaya, Rashaya and Serghaya faults) and in uplifts as high mountainous terrain (Mount Lebanon and Anti Lebanon). Recent work has categorized the Lebanese section of the Dead Sea Transform fault as being a strong seismic activity zone with the most recent earthquake in 2008 where its magnitude was 5.1 (Khair *et al.*, 2000; Huijer *et al.*, 2011). The geological setting in North Lebanon is quite diversified, dominated by layer formations from the lower and mid cretaceous era consisting of sandstones overlain by extensively fractured thick marine limestone. In the Tripoli area and suburbs the layers are from the Quaternary era, formed of dunes and lake deposits while basaltic volcanic formations from the upper Cenozoic era are found in the northern part of Akkar. On the other hand, patches of limestone from the Miocene era form an important part of the geologic profile of Al Koura and Zgharta regions (Figure 4.) (Walley, 1997).
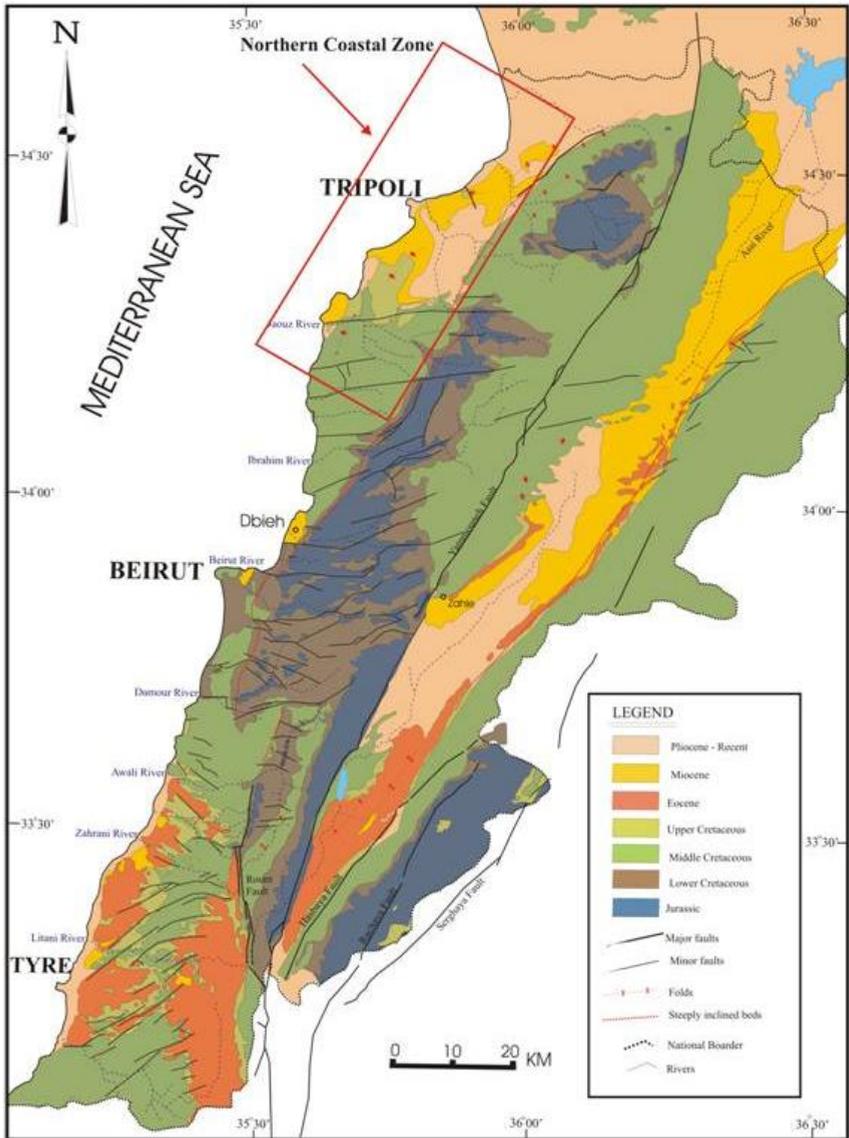
Figure 4.2: Tectonic map of Lebanon (Dubertret, 1955).

The topographic feature of North Lebanon is characterized by a clear contrast in terrain. This is mainly the outcome of the tectonic activity during the intense history of structural build up and uplift which left jagged and highly dissected terrain with dense faulting. The steepest slope starts at sea level at the Al-Shaqaa headland with a perpendicular elevation of more than 300 m. These dissected structures explain the existence of many major and minor faults. In North Lebanon the most important fault is the Akkar fault which is branched from the Yammouneh fault, oriented from a North East towards a South West direction, and passes through several areas such as Tripoli, Dinnieh, Zgharta, Koura and Batroun. Furthermore, there are many minor faults which are oriented from West to East in Zgharta, Koura and Batroun (IOE, 2007 a).

2.3. Fresh water

Lebanon is divided into two hydro-geological provinces: The Mediterranean Province comprising the western flanks of Mount Lebanon and the Interior Province consisting of the eastern flank of Mount Lebanon, Bekaa Valley and the western flank of the Anti-Lebanon mountain chain. The underground water in North Lebanon is a part of the Mediterranean Province and is a direct result of its lithology.

In North Lebanon there are six perennial rivers which flow west from their sources (Table 4.3), the largest one being Nahr El Kabir with a length of 58 km, while the Abou Ali River has the highest flow averaging 15.17 Mm3/month. The mountainous limestone formations of North Lebanon are fissured, fractured and rich in faults facilitating the percolation and infiltration of snowmelt and rainwater into aquifers. However, these faults can form barriers which segregate flow paths of water in different sub-basins. While the physical properties of aquifers remain almost unchangeable over time, the hydraulic and hydrologic

characteristics have altered due to uncontrolled groundwater tapping (Khair *et al.*, 1994; ECODIT/MOE, 2001; IOE, 2007 a).

Name	Caza	Length (km)	Flow (Mm3)				Perennial Index
			Annual	Monthly Average	Monthly Maximum	Monthly Minimum	
El Kabir	Akkar	58	190	6.02	13.9	1.8	0.13
Ostuene	Akkar	44	65	2.07	4.01	0.8	0.20
Araqua	Akkar	27	59	2.06	6.27	0.8	0.13
El Bared	Tripoli	24	282	8.94	15.2	2.7	0.18
Abou Ali	Bcharre-Tripoli	45	262	15.17	37.3	1.6	0.04
El Jouz	Batroun	38	76	2.4	6.18	0.4	0.06

Table 4.3: Flow Data for the perennial rivers of North Lebanon (Sources: Various including Al Hajjar, 1997)

In addition, there are numerous offshore freshwater marine springs in the North (ex. Batroun and Chekka marine spring) creating special underwater habitats. The marine springs facing Chekka consists of around 17 springs that have a considerable discharge estimated at 700Mm3 /yr. Twenty-three out of 34 springs and boreholes used for public water supply reported on the coastal zone are contaminated with faecal coliform. Primary causes of contamination are uncontrolled disposal of wastewater into the ground, infiltration of wastewater into ground water aquifers, and direct access by humans and animals to water sources. Another major cause of pollution is excessive pumping of ground water near the coast resulting in saltwater intrusion into underground aquifers (NBSAP/ SAP BIO, 2002).

2.4. Continental Shelf; Bathymetry and Sea Currents

The continental shelf in Lebanon is cut by deep canyons, is widest in the north (12 km), narrows down in a north south axis, widens up again to 8 km in the south and drops down abruptly to water depths of 1500m (Figure 4.3). Beyond this shelf break lays the ancient ocean crust. In terms of bathymetry, very few maps have been produced and most of the information is scattered. The only available maps are for the major ports for navigational purposes.
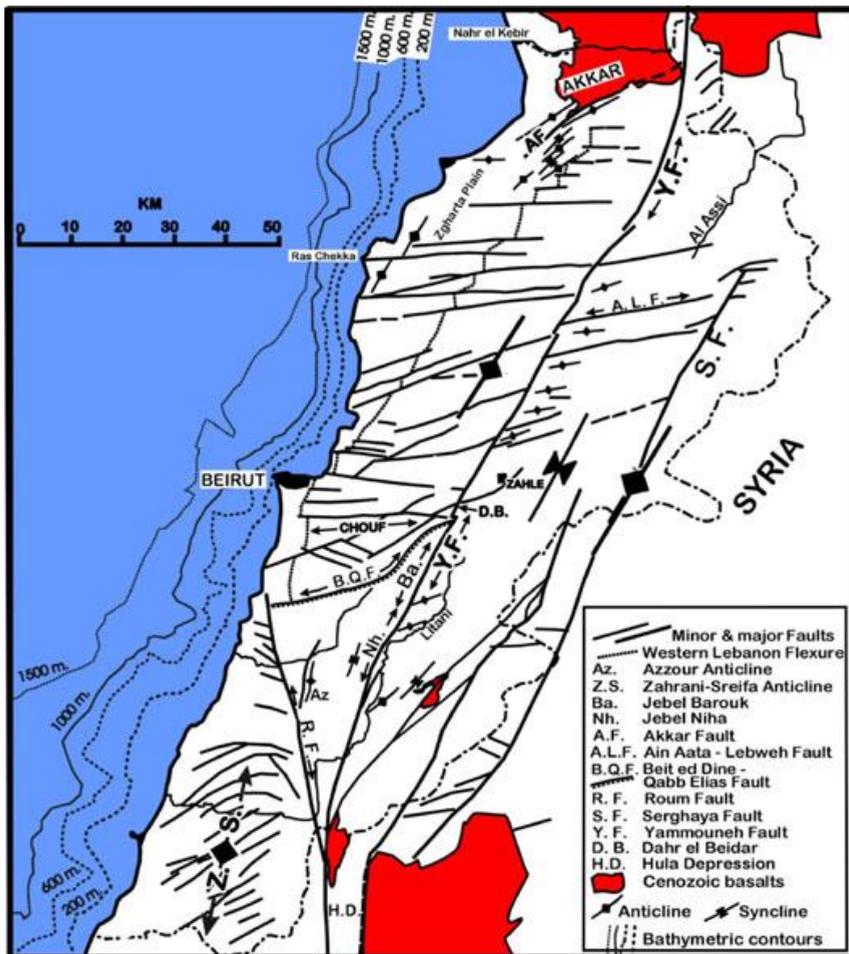
Figure 4.3: Continental shelf and bathymetric contours of the Lebanese coast; (Walley, 1997)

Off shore currents follow a north-eastern direction while eddy currents form near the shore in a clockwise direction. The eddy currents create a southerly movement of sand along relatively closed coastal areas often causing constant accumulation of sand at the entrances of harbours (Integrated Management of East Mediterranean Coastlines (IMAC) 2007; UNEP/MOE, 2013). A study performed over El-Mina area in Tripoli and around the PINR from March 1991 to February 1992, recorded relative high water salinity over the surface of the sea at $39^{o/oo}$. A remarkable decline in the salinity has been mainly recorded over the months of December, January and February due to increases in precipitation, river discharges and reduction in the evaporation factor (Abboud, 1992). The Mediterranean Sea waters have become relatively more saline as a result to the construction of the Assouan Dam in Egypt that decreased the Nile discharge into the Eastern Mediterranean Basin.

2.5. Sedimentary processes and biodiversity

There are no comprehensive studies on sedimentary processes on Lebanese beaches. However in light of the significant numbers of construction and quarries, soil erosion, desertification processes and sea filling, deposition of significant quantities of sediments mainly at river mouths and sea shore front is expected. The concentration of such deposition in specific periods surely has acute detrimental effects on marine fauna and flora.

At the Marine Resources and Coastal Zone Management (CZM) Program at the Institute of the Environment (IOB) of the University of Balamand's (UOB) Marine Resources and Coastal Zone Management Program (MRCZM) in 2009, a comparison between shorelines for the years 1970, 1994 and 2007 was made, respectively, using the year 1962 as the reference shoreline. This coastal evolution study showed a large amount of artificialization along the 100km of the coastal zone of North Lebanon (Annex

VII). More than 1,750,000m2 was sea-filled and 931000m2 of sand and pebble beaches were lost. Sea-filling and erosion have surely affected coastal dynamics and morphology and negatively impacted coastal and marine habitats. The question remains if the damages on this sediment starved coastline are reversible. Such studies are on-going and are being supported by socio-economic surveys and analyses within a coastal zone management perspective (Abou-Dagher *et al.* 2012).

Beach erosion due to sand and pebble extraction from the coastal areas and riverbeds has been extensive through the years of war, though currently such activities are utterly prohibited by law. However, such activities are still being practiced although at a much lower rate mainly due to the lack of implementation and enforcement of laws and the absence of a national strategy for coastal zone management.

The East Mediterranean basin is considered oligotrophic and lacks the nutrient richness of its occidental counterpart. Although there are significant discharges of nitrates and phosphates into the sea through sewers and rivers, neither eutrophication nor toxic algae blooms have been reported on Lebanon's coastal waters.

The marine and coastal flora and fauna in Lebanon are considered to be Mediterranean with some sub-tropical elements. Phytoplankton, which includes all microphytic algae, constitutes the basis of the food chain in the sea through their primary productivity. In addition, macro-zooplankton of various types and many species of invertebrates and vertebrates are highly abundant in Lebanese waters. Urbanization, industry, domestic wastes, garbage and illegal fishing methods are damaging marine biodiversity (Appendix V; VI). The sighting of Mediterranean monk seal has become a rare phenomenon while the sea horse is severely threatened by loss of habitat. Of particular significance is the loss of local terraces that are rich in biodiversity and unique to

this part of the Mediterranean (NBSAP/ SAP BIO 2002; Bitar 2008). However, frequent sightings of marine turtles and nesting sites have been confirmed in the past years in different locations of the Lebanese coast, and more specifically on the beaches of the PINR in the North, created under law No 121 on March 9, 1999 and classified as a Ramsar Site of International Significance in 2001. The Islands host 42 migratory birds and its sandy beaches are habitats for marine turtles. In addition, the islands host ancient salt beds and an old lighthouse. This Nature Reserve is public and managed currently by a GAC under the tutelage of the Ministry Of Environment (MOE) (IOE, 2007 a; TRAGSA GRUPO/MOE, 2009; MOE/UNDP/ECODIT, 2011).

The Lebanese coastal waters, however, allow for a potentially rich biological system. The Lebanese marine ecosystem comprises 1685 species of fauna of which 50 are commercially important fish species. The number of planktonic primary and secondary producers is over 1250 species (NBSAP/SAP BIO 2002; Bitar 2008; Nader, 2011). These await proper documentation and conservation because they are subjected to pollution from land based sources that might lead to their extinction.

3. SOCIO-ECONOMIC FEATURES OF THE COASTAL ZONE OF NORTH LEBANON

3.1. Demographics

Approximately 8870 hectares of the Northern coast is currently urbanized having Tripoli as its capital and includes the second largest port in Lebanon (Appendix VI; UNEP-MAP/ECODIT, 2005; Mitri *et al.*, 2012). The population of North Lebanon comprises approximately 768,000 inhabitants (CAS, 2004). The largest concentration, 325,308 individuals, lives in the cadastral area of the Union of Municipalities of Al-Fayhaa. The population

density in this cadastral area averages 11 000 ind/km2 (TEDO, 2006) in comparison to 331 people/km2 in the entire of North Lebanon (based on 1996 estimations; Table 4.4). In North Lebanon, the birth rate was calculated at 2.09%, contributing to 1/3 of the national population growth (Figure 4.4). This is leading to continuous pressure on natural resources and will consequently affect the quality of living in the area.

Caza	Population Estimate 1996	Population density/km2	Average Household size
Akkar	198,174	251	6.0
Minieh-Dinnieh	96,417	235	5.7
Tripoli	227,857	8439	5.2
Zgharta	48,974	270	4.6
Bcharre	16,831	106	4.7
Koura	47,540	276	4.4
Batroun	34,817	121	4.6
Total	670,610	331	5.3

Table 4.4: Demographic data per Caza in the Mohafaza of North Lebanon (MoSA/UNDP, 1996)

The average age of household heads was found to be 42.5 years old (Figure 4.4; Doumani, 2007). In a more recent study held at the MRCZM-IOE-UOB under the ERML project, the average age of those interviewed in the sample by the socio-economic study was 39 years old for the entire coast, with an age of 39 for North Lebanon (Figure 4.4; UNEP/MOE, 2013).
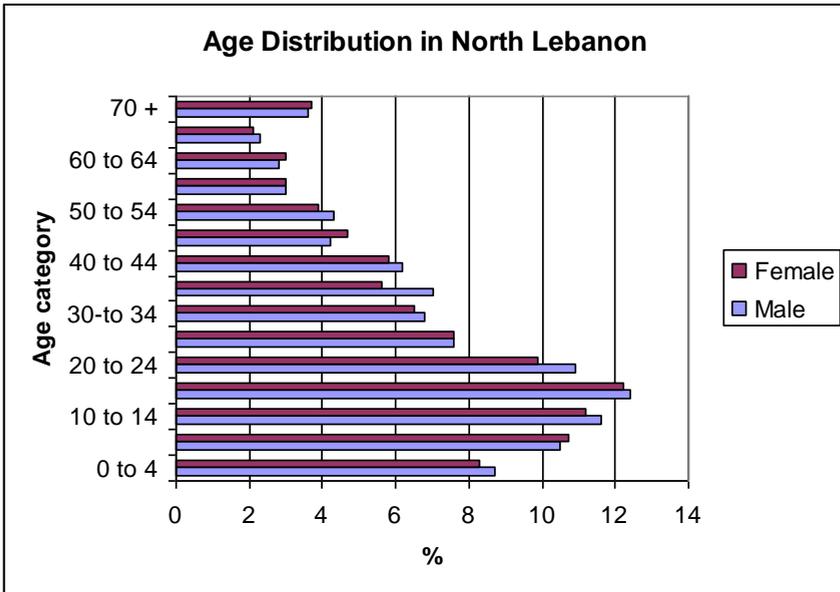
Figure 4.4.: Distribution of population in North Lebanon according to age category by estimation of year 2002 (TEDO report August, 2006)
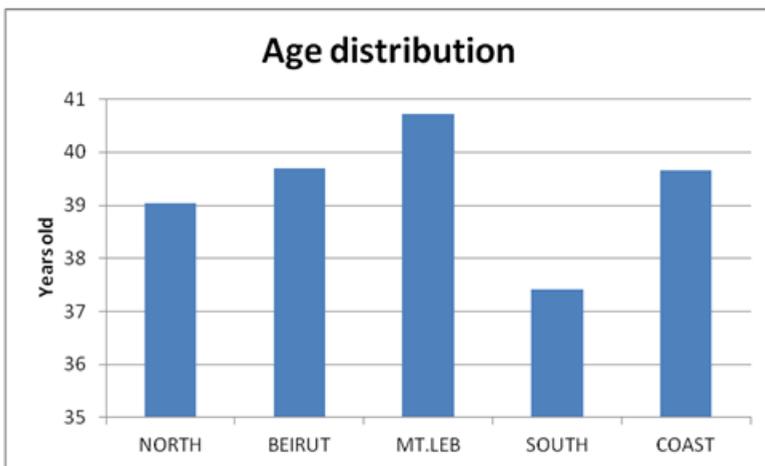
Figure 4.5: Average age distribution on the coast (UNEP/MOE, 2013).

In North Lebanon, it was very difficult to target women as they do not accept to answer the interviewer, or are simply not present in the streets which were due to cultural specificities (UNEP/MOE, 2013) and therefore the higher percentages of male respondents in the target area (Figure 4.5; UNEP/MOE, 2013).
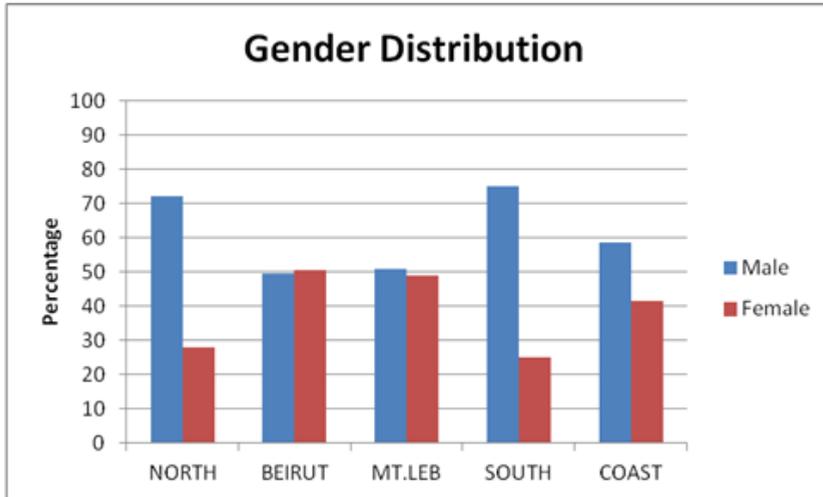
Figure 4.6: Percentage of male and female in the sample (UNEP/MOE, 2013)

Regarding education, less than 25% of the northern has secondary education and less than 35% have complementary educational level (Figure 4.7).
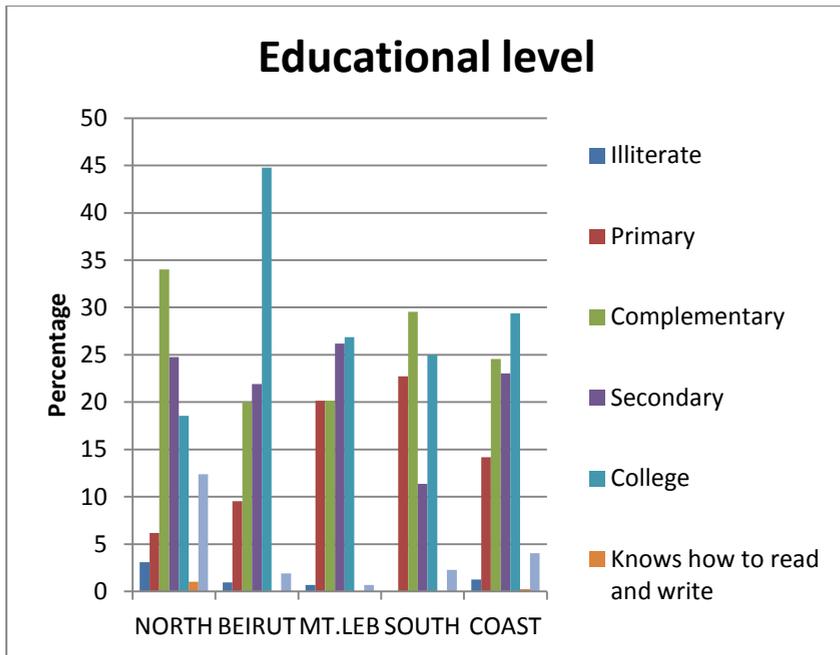
Figure 4.7: Educational level in North Lebanon

The percentage of people not working but looking for a job can be considered as a proxy measure of unemployment. The level of activity of the labour force participation rate is therefore the sum of the percentage of those working and those looking for a job. Results of the distribution of the labour force for the North Lebanon coastal zone is 91% compared to 80% for the coast as a whole (Figure 4.8; UNEP/MOE 2013 b).
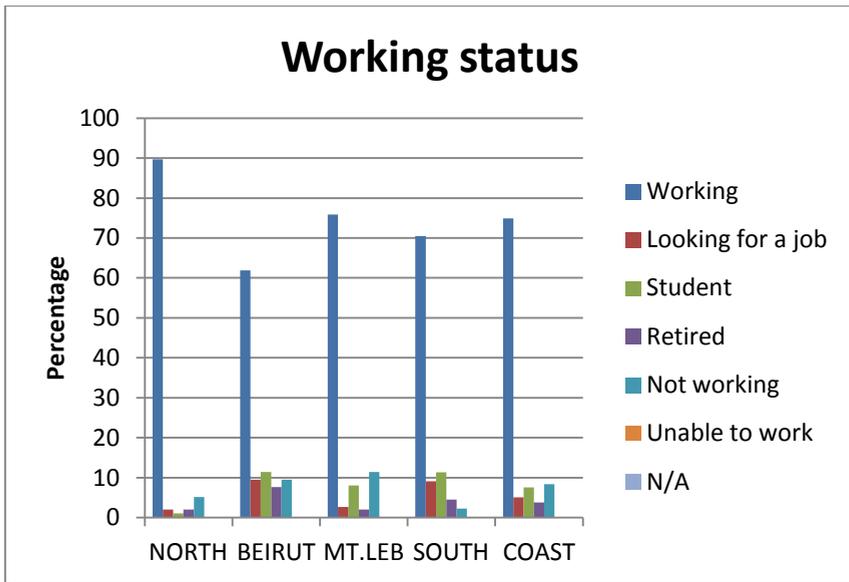
Figure 4.8: Percentage of the working status on the coast.

Figure 4.9 summarizes the distribution of the working population and the percentage of the respondents working in each sector of economic activity.

Distribution Of Working Population Among Economic Sectors
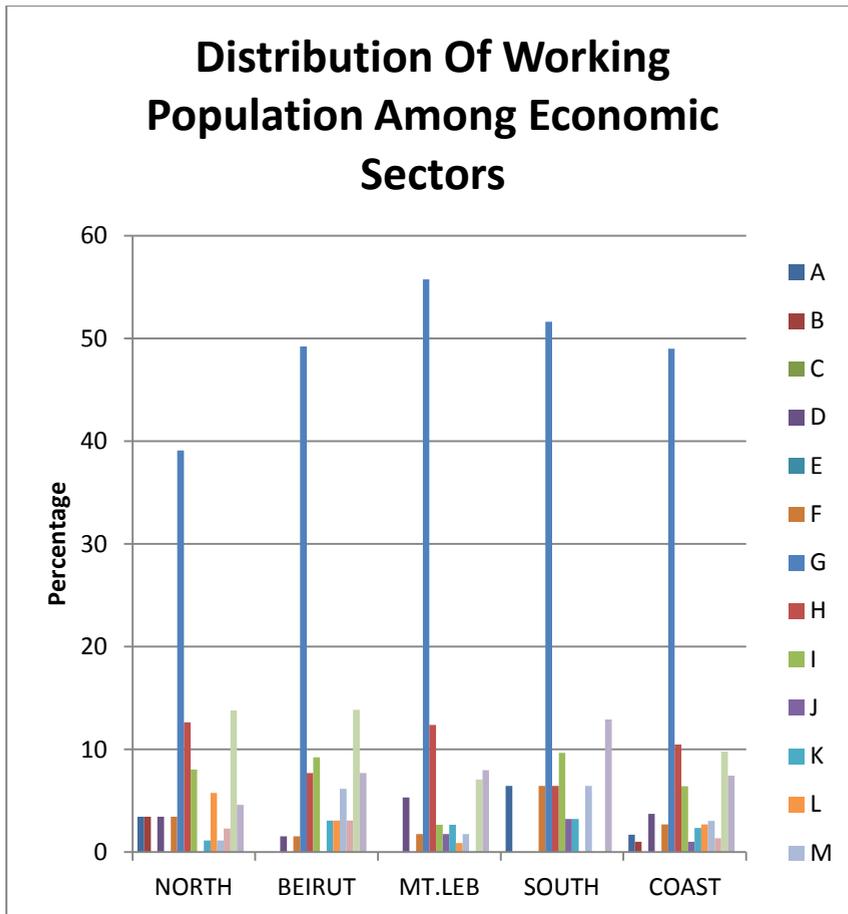
Figure 4.9: Percentage of the working respondents in each economic sector

A - Agriculture, hunting and forestry; B – Fishing; C - Mining and quarrying; D – Manufacturing; E - Electricity, gas and water supply; F – Construction; G - Wholesale and retail trade; repair of motor vehicles, motorcycles and personal and household goods; H - Hotels and restaurants; I - Transport, storage and communications; J - Financial intermediation; K - Real estate, renting and business activities; L - Public administration and defence; compulsory social security; M – Education; N - Health and social work; O - Other community, social and personal service activities; P - Activities of private households as employers and undifferentiated production activities of private households; Q - Extraterritorial organizations and bodies

Results show that less than 3% of the interviewees work in the primary sector, (agriculture and fisheries), 3.71% work in manufacturing and majorities work in the services sector with an impressive 48% in retail trade activities (UNEP/MOE, 2013 b).

3.2. Economics

3.2.1. The industrial sector

In 1994, the Lebanese Ministry of Industry (MOI) launched an industrial census with the assistance of the German Technical Cooperation (GTZ). This census updated in 1999 shows that approximately 17% of industrial establishments are located in North Lebanon and employ over 14,000 workers. Most (over 80%) are small manufacturing plants that employ less than 10 individuals. The MOI census allocated industrial activities to eight primary industrial branches which cover nearly 89% of the industrial sector (Table 4.5). The largest part of the Lebanese non-metallic mineral industry is located in Batroun Caza between Selaata (55 km to the north of Beirut) and Chekka (60 km to the north of Beirut) and contributes significantly to air and marine pollution (Karam and Tabara, 2004). In Chekka, there are two cement factories: Holcim (HC) with a total production capacity of 2.5 million tonnes/year with the highest market share in Lebanon (41.1 percent) and Ciementerie du Liban (CLi) with a total production capacity of 1.65 million tons/year with a preliminary output impact of US$ 211.8 million and 918 workers in 2005 (Doumani, 2007). In addition, the Lebanon Chemicals Company (LCC) S.A.L produces approximately 664,000 tons/year of sulphuric acid, 180,000 tons/year of phosphoric acid and 85,000 tons/year of phosphatic fertilizers in the free zone of Selaata. This export oriented industry, whose exports are exclusively destined to Europe, releases 300,000 tons/year of gypsum slurry into the sea contaminated with heavy metals (cadmium) and residual sulphuric acid making it one of the major hot spots on the

Lebanese coast. The preliminary outcome impact amounts to US$ 139.5 million and are not official figures (Karam and Tabara, 2004; IOE, 2007 a; Doumani, 2007). Also, the piping industry is one of the major branches represented by the factory of Future Pipes, a major Polyethylene, Polyvinyl chloride and fibre-glass factory located in the Akkar coastal plain.

Mohafazat	Caza	Municipality	Number of factories member of Association of Lebanese Industries (ALI) in the municipalities	Total Number of factories in the municipalities
North	Akkar	Bebnine	0	6
		Mhammaret	0	3
	Menieh-Denieh	Menieh	2	23
		DeirAammar	0	6
		Beddaoui	0	18
	Tripoli	Mina	5	72
		Tripoli	7	161
	Koura	RasMasqa	0	6
	Tripoli	Qalamoun	2	18
	Koura	Enfeh	1	7
	Batroun	Chekka	5	12
		Selaata	2	2
		Batroun	1	8

Table 4.5: Number of industries on the Lebanese coast (only 20% of these facilities are members of the Association of Lebanese Industrialists (ALI))

Source: Chamber of Commerce, Industry and Agriculture (CCIA) 2011; Industrial Directory 2012

Those are distributed into eight large industrial branches (Table 4.6).

Industrial Branch	Quantity: Lebanon	%	Quantity: North Lebanon	%
Food products and beverages	4,480	23	1,020	28.7
Leather and leather products	1,290	6.6	117	3.5
Textiles	804	4.1	115	3.3
Clothes & dyeing fur	2,263	11.6	286	8.3
Wood products	2,249	11.5	151	4.4
Non-metallic mineral products	2,530	13	551	16
Fabricated metal products	3,553	18.2	477	13.8
Furniture and other manufactured goods	2,352	12	770	22
Total	19,521	100	3,487	100

Table 4.6: Distribution of the eight largest industrial branches in North Lebanon

Source: MOI, 2000

North Lebanon though is well-known for its small artisanal industry like stone cutting, soap making, salt extraction, and pottery making. Many of those trades are being lost for other large industrial initiatives. For example, boat construction is one of the oldest artisanal industry that is traditionally performed on the El Mina quayside and consists of wooden and fibreglass boats. This activity suffered extensively from the 2006 Israeli War on Lebanon and has lost most of its craftsmen. The preliminary output impact, household income and craftsmen are respectively US$ 0.33 million, US$ 0.13 million and 30 in 2005 (IOE, 2007 a; Doumani, 2007).

In North Lebanon, there are three main power plants producing electricity. Leaking storage tanks and the process of loading and unloading heavy fuel oil via sea pipelines result in constant leakages and some accidental spills in the marine environment.

The Deir Amar Thermoelectric Plant generates a total capacity of 435 MW and was established between 1998 and 2000. It was designed to work on natural gas supplied from Syria through pipelines by the year 2002. The pipeline was to be later extended to the Zahrani power plant but the work was discontinued due to political reasons. The Deir Amar Power Plant is currently operating on fuel oil that is responsible for the largest part of accounted SO_2 emissions in the region. Therefore, the price of not substituting the plant to gas is resulting in unfortunately forgoing huge financial and environmental benefits. The non-substitution to gas is preventing savings in the plant's oil consumption that were estimated at US$ 150 million per year in 2002 prices (based on a Brent oil/barrel at US$ 20 in 2002) and US$ 450 million per year in 2007 prices (based on US$ 60). Moreover, environmental health effects especially due to benefit losses for not reducing sulphur, NO_x, CO_2 and PM_{10} emissions were estimated at US$ 206 million between 2005 and 2020. This mismanagement is compounded by another missed opportunity in terms of carbon funding, which could have helped defray the cost of the switch and improved the financial state of the troubled Electricité Du Liban (EDL) and even more importantly eased the balance of payments pressures. These positive effects could have also been compounded should the Zouk, Jiyyeh and Zahrani power plants (collectively 1,388 MW installed capacity and 1,250 MW effective capacity) were switched to gas.

The Hreicheh Thermoelectric Plant located to the North of the town of Enfeh with a 75 MW installed capacity and 42 MW effective capacity, while the Abou Ali Hydroelectric plant produces a capacity of 1.5 MW and El Bared generates a capacity of 15 MW. These two plants negatively impact coastal environments by blocking river water behind dams and trapping nutrients and organic matter and preventing them from reaching the marine environment.

3.2.2. *The tourism sector*

Thirty seven hotels and touristic resorts are located on the 100 Km North Lebanon coastline (UNEP/MOE b., 2013). The impact of traditional tourism has been expressed in different forms according to the type of practice. For example, on the coastal zone, the deteriorating effect of manmade marinas and embankments on coastal biocenoses, which is vital for the spawning and feeding of coastal organisms, did not halt the additional construction of such urban structures. Those resorts have greatly reduced the access to public beaches, and a vast majority of them are illegally built on public maritime domains (Table 4.8; Abou-Dagher *et al.*, 2012). The various coastal marinas and sea fronts are currently used for recreational activities such as unregulated recreational fishing, scuba diving, jet-skiing and boating. The concentration of recreational activities within beach resorts and open-air restaurants in all seasons swells traffic and the number of visitors leading to an increase in green-house-gas (GHG) emissions and in the amounts untreated solid waste and wastewater. Due to serious deficiency in traffic management, the main roads leading to and from tourist destinations are crowded and sometimes grid locked during peak hours by enthusiasts. Those areas host a large number of restaurants, nightclubs and coffee shops, and offer magnificent vistas (MOE/ ECODIT, 2001; MOE/UNDP/ECODIT, 2011).

Ecotourism, on the other hand, occupies a humble share in comparison to traditional tourism. Detailed data on the ecotourism sector in North Lebanon is lacking in exception to the number of visitors to the PINR. The visitors' number to PINR fluctuated in the last 5 years between 24,000 and 31,000 (TEDO, 2006). On the other hand, cultural tourism is focused mainly on the Tripoli Citadel.

Mohafazat	Caza	Municipality	Numbers of hotels and tourist resorts	Percentage of tourism entities by municipality
North	Tripoli	Tripoli	10	3.18
		Qalamoun	2	0.63
	Koura	Enfeh	1	0.31
	Batroun	Chekka	15	4.77
		Batroun	9	2.86

Table 4.7: Number of hotels and touristic resorts on coast by municipality

However, the number of people visiting this archaeological site has steadily decreased from 16,085 in 1998 to 7,085 in 2005. Until June 2006, the number of visitors to Tripoli Citadel had reached 4,709 (TEDO, 2006). Additionally, the armed clashes in and around the city Tripoli since 2008 till date have severely reduced the number of visitors to Tripoli in particular and to the northern coastal zone of Lebanon in general (UNEP/MOE, 2013 b).

Caza (Type5 \ Usage)	Batroun				Koura			Tripoli				Abde	Usage total
	Sea filling	Marina	Jetty	None	Marina	Jetty	None	Sea filling	Marina	Jetty	None		
Tourist activity/ Private residence	5	8	-	13	3	-	-	-	12	6	2	-	49
Industrial activity	-	11	2	2	1	-	1	23	26	1	2	-	14
Unknown/ Empty	2	-	-	-	-	-	-	1	2	54	-	1	10
Fishing2	-	51	-	-	2	-	1	-	36	-	-	1	11
Total	7	14	2	15	6	-	1	3	19	12	4	1	84
Caza total	38				7			38				1	84

1 Selaata port facility consists of a big marina preceded by a jetty. Selaata's port usage is both industrial and fishing, and is included in both categories.

2 Fishing ports are not exclusively used for fishing. Many tourism/private boats are moored in these ports especially in Tripoli and Batroun.

3 The landfill at Tripoli is considered as a sea filling site for industrial usage.

4 Some jetties have a small marina added to the construction

5 All of the sea constructions cited in the table (marinas – jetties) are in fact sea filling activities. But they are differentiated according to their shape and usage

6 Tripoli Port has three activities: Fishing, Tourism and Industrial. In this table, it is included as two ports: fishing and industrial.

Table 4.8: Number of sea construction activities in the four Cazas with coastlines

3.2.3. Transportation sector

Lebanon encompasses more than 1.2 million registered vehicles with almost 75% as private cars. The length of Classified Road Network (CRN) in North Lebanon is approximately 1,558 km (MOE/Ecodit, 2001) forming 26% of the national CRN. There are three primary road axes passing through the coastal zone: 1) the Coastal International Road from Madfoun to Arida; 2) the Coastal International Road from Madfoun to Abboudieh (at the Syrian border); and 3) the Northern Expressway from Madfoun to Arida (Table 4.9). The two Coastal International roads have a common segment stretching from Madfoun to Abdeh (Table 4.9; Table 4.10).Visual observations show that the largest part of traffic volume is on the Expressway and the main International Coastal Road from Tripoli till the Syrian border, of which a significant part consists of trucks transiting between Lebanon and its neighbouring countries such as Syria and Iraq (MOE/ ECODIT, 2001; CAS, 2008; MOE/UNDP/ECODIT, 2011).

Road[20]	Length (km)
The Coastal International Road from Madfoun to Arida (at the Syrian border) via Tripoli	77
The Coastal International Road from Madfoun to Abboudieh (at Syrian border) via Tripoli	83
Constructed Segment of The Northern Expressway from Madfoun to Tripoli (segment from Tripoli to Arida still under construction)	42

Table 4.9: Primary road axes in North Lebanon

The pace of construction and development of road networks have not kept up with population growth. Unplanned and poor roads have compromised the landscape and ecosystem integrity on the northern coastal zone. Coastal roads have promoted urban,

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[20] Both road networks have common segments stretching from Madfoun to Abdeh (57 km).

opportunistic and uncontrolled sprawl in the form of ribbon construction strips as observed on the Abdeh-Halba road.

Road	Length (km)
Batroun- Tannourine Road	35
Chekka- Cedar via Amioun Road	60
Tripoli Ehden Road via Zgharta	35
Tripoli Bcharre via Ehden Road	50
Tripoli-Sir Ed-Dinnieh Road	23
Tripoli-Khayat via Abdeh Road[21]	55

Table 4.10: Secondary road axes in North Lebanon

Figure 4.10: Ribbon construction in the rectangle along Aabde-Halba road (Akkar)
(Source: Council of Development and Reconstruction (CDR) and ECODIT-IAURIF, 1997)

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[21] Common segment with the Tripoli-Abdeh road (15 km).

According to a land use survey conducted in 1999 (Lebanese Ministry of Public Works and Transportation (MOPWT), 1999), 42.1 % of lands adjacent to international roads were built up (UNEP/MOE, 2013 b).

The second largest commercial marine port in Lebanon is located in Tripoli (Table 4.11). On the other hand, the major industries in the North have their own private ports. The cement industries in Chekka possess a private marina for the import and export of material while the Chemical Company in Selaata uses its private port to import sulphur to produce sulphuric acid and to export the produced chemical fertilizers. Furthermore, the thermal power plant in Deir Amar includes a port and offshore pipelines for refuelling purposes

Year	Number of Entering Commercial Ships	Ship Capacity (1000 barrels)	Number of oil Tankers[22]	Capacity of oil Tankers (1000 barrels)
2001	494	801	60	600
2002	437	707	76	795
2003	474	845	79	715
2004	543	919	82	763
2005	424	657	66	650

Table 4.11: Transport activity via Tripoli port 2001 to 2005 (CAS 2001-2005)

Marinas induce visual quality degradation to the aesthetics of the landscape. The view of the ports, ships, cargos and artificial lights disturb the natural beauty of the coast and lead to the degradation of marine and coastal ecology where the location of the port affects the aquatic fauna and flora through changes in water quality. Piles, concrete surfaces and other constructions create new habitats for undesirable new species. Most have been identified as invasives introduced accidently through ship ballast

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[22] Number of tankers is independent from the number of commercial ships.

water carried from one geographical area to another (Marine Work Group, 2011). Docking, transfer, reloading of a variety of goods, especially refuelling and chemical transport from industrial ports poses major threats in case of accidents due to lack of maintenance and technological upgrading (Doumani, 2007; UNEP/MOE, 2013 b).

North Lebanon is home to two small airports located in the coastal strip. The Hamat Airport was created in 1976 for special tourist trips and for the export of agricultural produce while the Qleyat Airport was created for military purposes. Currently, both airports are used by the Lebanese army. Future plans intend to transform the Qleyat air field into a commercial airport. Increasing air traffic will surely lead to an increase in further development of the areas surrounding the airport and most probably pushing this coastal region further into becoming a highly industrialized area. Information on the future Hamat Airport is lacking.

3.2.4. Agriculture

The agricultural sector contributes about 6% of Lebanon's Gross Domestic Product (Doumani, 2007). Cultivated lands occupy approximately 24% of Lebanon's territory, amounting to 248,000 hectares. In North Lebanon, the surface area of cultivated lands is approximately 63,000 hectares with 35% classified (22,000 hectares) as irrigated (Table 4.12; UNEP/MOE, 2013b). The agricultural activity is concentrated in the Akkar plain and the narrow coastal plain stretching from Batroun to Tripoli where five main types of crops are planted: cereals, olives, fruit trees, industrial crops (beet, tobacco, and vineyards) and vegetables (Table 4.13). Forty percent of the land used for olives is found in the Akkar and Koura Cazas.

Mohafazat	Caza	Municipality	Agricultural area in 2010 (ha)	Agricultural area in percentage of total municipal surface (2010)
North	Akkar	Qleyat	14916994.20	75.90
		Mqaiteaa	3316801.88	90.80
		Qoubbet-Chamra	3319513.59	93.13
		Bebnine	6052282.19	89.43
		Mhammaret	2777518.21	72.06
	Menieh-Denieh	Bhanine	5455514.74	83.26
		Menieh	8012127.51	80.89
		Borj El-Yahoudiyeh	1282277.04	60.83
		DeirAammar	1837411.20	52.44
		Beddaoui	2863929.85	51.84
	Tripoli	Mina	454406.50	11.88
		Tripoli	9929445.09	49.07
	Koura	RasMasqa	3520317.31	46.97
	Tripoli	Qalamoun	1393679.14	44.27
	Koura	Enfeh	4902407.05	48.25
	Batroun	Chekka	2952384.41	36.76
		Heri	380747.48	26.20
		Hamat	2460483.85	24.81
		Selaata	188099.85	9.28
		Batroun	2007475.74	42.99
		Koubba	557628.60	48.61
		KfarAabida	963603.36	26.86

Table 4.12: The area of the agricultural land in the different coastal municipalities of North Lebanon

Source: Classification LULC (refer to section 5.2)

Uncontrolled pumping of underlying aquifers in the area for irrigation purposes resulted in a significant drawdown of the water table along with a remarkable degradation of irrigation water

quality due to sea water intrusion. In general surface and well water are consumed on an equal share for agricultural activities that use mostly surface irrigation methods (MOE/ECODIT, 2001).

Type of Crop	Occupied surface area
Cereals	12038
Fruit Trees	13568
Olives	20963
Industrial Crops	3777
Vegetables	12858
Total	63204

Table 4.13: Land Use for Major Type of Crops in North Lebanon (hectares) (Lebanese Ministry of Agriculture (MOA) and FAO, 2000)

The surface area of agricultural production in Greenhouses occupies approximately 1100 hectares which forms 1.7% of the total cultivated surface in North Lebanon (MOA/FAO, 2000). The extensive mode of production implies a massive usage of pesticides and agrochemicals. Clear and accurate figures on these practices are not available. On the national scale, Lebanon imported in year 1999 approximately 1,538 tons of pesticides. The largest part consisted of insecticides and fungicides (MOE/ ECODIT, 2001) with the highest amount of pesticides used in vegetable production. In addition, a study on the indiscriminate and uncontrolled use of agrochemicals reported a 30% additional dosages being applied by farmers (Farajalla, 2005; UNEP/MOE, 2013). Furthermore, crops are being sprayed with no respect to the withdrawal period necessary before harvesting posing health risks to consumers.

On a positive note, the Government of Lebanon signed the Stockholm Convention on persistent organic pollutants, and 1998, the MOA banned imports of 110 pesticides that are considered potent and persistent in the environment. Furthermore, many local

and environmental NGOs are providing targeted extension programs to local farmers in a variety of agricultural disciplines including the promotion of organic farming.

3.2.5. *Fisheries and water management*

Lebanese fisheries are artisanal or traditional. During the nineties the Lebanese Government implemented a program to rehabilitate 15 fishing harbours along the Lebanese coast, including 4 in North Lebanon: Al Abdeh (250 boats), El Mina (1000 boats), El Qualamoun (50 boats) and Batroun (80 boats). Living marine resources are managed by the Ministry of Agriculture, while the Ministry of Public Works and Transport (MOPWT) is in charge of the fishing boat registry (Majdalani 2005; Sacchi and Dimech 2011). The Lebanese fishing fleet totals 2,662 registered fishing boats spread along the entire coast. The main gears include trammel nets, gill nets, long lines, purse seine nets (*lampara*) and beach seines. Fishing usually occurs to a maximum depth of up to 200 m, while most activities take place at an average depth of 50 m. The fishing grounds, gears and habits are similar along the Lebanese coast. Logbooks are not used and catch reporting from fishers, when existing, tend to be underestimates. Moreover, illegal fishing techniques using dynamite and nets with small mesh size are chronic problems that, even though reduced, have not been completely resolved.

In addition, historical fisheries data are sporadic and the country lacks information on stocks, by-catch and discards (Majdalani 2004; Bitar 2008; Nader *et al.* 2012a; Nader *et al*. 2014). Nevertheless, the past few years have seen the launching of several initiatives to address the problems plaguing the sector. In 2006 the MRCZM-IOE-UOB initiated a data collection program of commercial fisheries in North Lebanon. This includes landings and effort in the Mohafaza (governorate) of North Lebanon and Akkar, covering 45% of the Lebanese coastline.
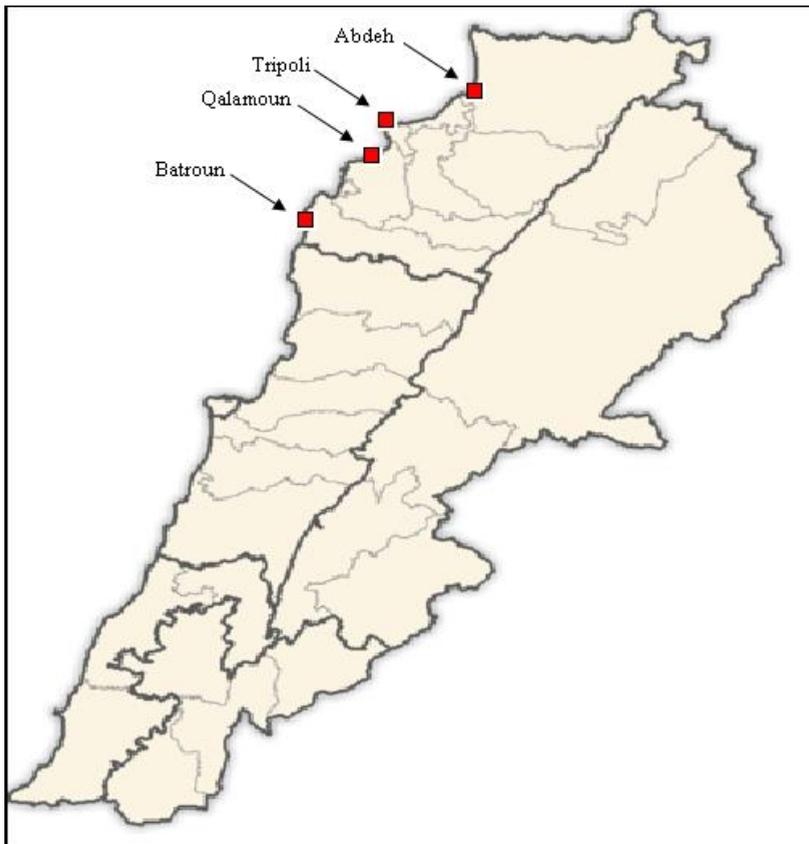
Figure 4.11: Major fishing ports in North Lebanon (Nader et al. 2012b)

Currently, information about fishing gear, species, quantity, price
and size is collected on a weekly basis for 88 commercial species
from the four major ports in North Lebanon: Batroun, Qalamoun,
Tripoli and Abdeh (Figure 4.11). On the other hand, effort data
are obtained from the records of the Lebanese Army that registers
boat activity on a daily basis. Gathered information is entered in
the Fish Landing Operational Utility for Catch Assessment
database (FLOUCA) allowing the generation of monthly and
yearly trends of catch, catch per unit effort (CPUE), and average
price for the monitored species. The main goal of the initiative is
to establish long-term monitoring of commercial fish landings and

effort in order to contribute to developing appropriate management plans based on scientific data to sustainably benefit from the resource (Nader *et al.* 2012b). Furthermore, the Lebanese National Council for Scientific Research (CNRS), through the National Centre for Marine Sciences (NCMS), implemented the CANA project funded by the "Italian Cooperation for Development in Lebanon and Syria" and the Lebanese Government. The overall objective is to increase the knowledge of coastal and marine environments towards drawing responsible and sustainable development outlines while preparing guidelines for an integrated coastal policy. In addition, the Italian Ministry of Foreign Affairs, in collaboration with the CNRS-NCMS and the CANA team, launched in June 2012 the project PescaLibano. Its main objective is to provide "technical assistance to the Ministry of Agriculture in the field of fishery development". On another front, the EastMed-Project by the Food and Agriculture Organization of the United Nations (FAO) in collaboration with the Ministry of Agriculture in Lebanon and funded by Greece, Italy and the European Community, is supporting the development of regionally-consistent fisheries management plans among the Eastern Mediterranean countries. The project's longer-term development objective aims at contributing to the sustainable management of marine fisheries in the Eastern Mediterranean, and thereby supporting national economies and protecting the livelihoods of those involved in the fisheries sector. Within this context, an agreement was signed between the FAO-EastMed project and the IOE-UOB to initiate a "Pilot Survey on Fisheries Dependent Data Collection in Lebanon Including Training". The IOE-UOB contributed to improve and implement the national fisheries dependent data collection program through the expansion of FLOUCA into FLOUCA Web and through training related staff of the Lebanese Ministry of Agriculture on the expanded application. FLOUCA Web operates as an internet-driven system

with outposts at selected major ports of the Lebanese coastline and is quite transparent in its operations. As can be seen, several initiatives have been launched in the past few years to properly and sustainably manage marine and coastal resources, taking into consideration the well-being of coastal communities.

All the above listed studies provided the baseline data for reconstructing the historical fisheries catch of Lebanon from 1950 till 2010. Available patchy historical information supported by the estimates generated by FLOUCA allowed calculating the values of total catches for Lebanese coastal regions from 1950 to 2010 for a total of 345,000 t, that being 2.4 times the 141,000 t reported by the FAO on behalf of Lebanon. This evaluation provided a more comprehensive measure of fisheries catches in Lebanese coastal regions since it covered a broad range of sectors such as artisanal, subsistence and recreational fishing in addition to discard estimates (Nader *et al*. 2014).

There are two major sources of coastal water pollution plaguing the northern coast of Lebanon: solid waste and domestic and industrial wastewater discharges. Sinking garbage covers considerable areas of the neritic zones of the Lebanese coast and degrades natural benthic substrates while pollution from wastewater constitutes a serious health problem. Winds, waves and currents, driven by the prevailing winds move pollutants at sea progressively shoreward. Deposits of organic matter reduces the concentration of dissolved oxygen while wood and solid waste along the shores create unsightly and sometimes dangerous conditions for the public (NBSAP/SAP-BIO 2002; UNEP/MOE/ECODIT, 2011; UNEP/MOE, 2013 a).

Mohafazat	Caza	Municipality	Water treatment plant
North	Akkar	Bebnine	Under preparation
North	Tripoli	Tripoli	Achieved and awaiting operation
North	Batroun	Chekka	Achieved and awaiting operation
North	Batroun	Batroun	Achieved and awaiting operation

Table 4.14: Inventory and status of the waste water treatment plants along the coastal zone of North Lebanon

Source: CDR Progress Report 2011

Generated waste water in the Northern district is of 137.6-142 thousand m3/day with an average of 0.15 m3/day/capita. Hotspot areas include Al-Abdeh, Tripoli, Enfeh, Chekka and Selaata. In these areas, approximately 74,300 m^3/day of sewage are discharged which is equivalent to a Biological Oxygen Demand (BOD) charge of 10,850 tons per year. Industries release an additional estimated 6,000 m^3/day via 13 identified short sea industrial outfalls. Furthermore, Tripoli landfill generates an estimated 24,000 MT of leachate per year. In addition, 300,000 tons per year of gypsum are released into the sea from the Lebanon Chemical Company located in Selaata, which might contain Cadmium (Table 4.14; Doumani, 2007).

Only two out of ten sewage treatment plants (Chekka, Batroun) had been constructed in the last few years and awaiting operation while others are under construction. A wastewater treatment plant serving 2000 residential units has been operational in Batroun for the past year (UNEP/MOE b., 2013). Other sources of water pollution include effluent from tanneries, rock-sawing industries and oil refineries. Within this context, various levels of heavy metals were detected in marine coastal waters near industrial facilities such as the Selaata Chemical Plant, Chekka

cement factories and the Akkar pipe industries (MOE/UNEP/ECODIT, 2011; UNEP/MOE, 2013 a).

Urban solid waste had been uncontrollably disposed off in many illegal dumpsites like in the Akkar coastal plain and in the many valleys of the Mohafaza. However, the Tripoli sanitary landfill remains by far the largest recipient of municipal waste where litter of approximately 400,000 people continues to flow on a daily basis at an average daily rate of 0.95 Kg/day/capita (Table 4.15). The Tripoli landfill has been upgraded and rehabilitated but still poses threat through leachate generation and benthic litter. To date, no plans for new landfills on the northern coastline are drawn and no other significant point source pollution from urban solid waste was identified (MOE/UNEP/ECODIT, 2011; UNEP/MOE, 2013).

Year	Dumped Waste /Year (kg)	Dumped Waste /Day (kg)
2001	101,082,000	276,940
2002	103,900,000	284,620
2003	97,900,000	290,480
2004	107,102,000	293,430
2005	108,229,520	296,520

Table 4.15: Quantity of waste in Tripoli landfill from 2001 to 2005 (Source: TEDO report August 2006)

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APPENDIX I

Cultural and ecological sites along the coastal zone of North Lebanon

Site Name	Location/ Municipality	Conservation Status	Sources
Aarida estuary	Qleiaat.	Recommended/proposed conservation.	CDR/ECODIT/IAURIF, 1997.
Cheikh Zennad Beach	Qleiaat.	Recommended/proposed conservation.	MOE; CDR/ECODIT/IAURIF, 1997.
Salinas and wetland of Qleiaat	Qleiaat.	Recommended/proposed conservation.	CDR/ECODIT/IAURIF, 1997.
Coastal dunes of Akkar Plain	Qleiaat. Mqeitaa. QoubbetChamra.	Recommended/proposed conservation.	CDR/ECODIT/IAURIF, 1997.
Aarqa river estuary	QoubbetChamra.	National conservation.	MOE, Decision no. 188/1998.
City of Orthosia in El Bared River	Mhamrat.	N/A[23]	
Terraces of El Mina beach	El Mina.	N/A	
Terraces and Beach of southern Tripoli towards Qalamoun	Tripoli. Qalamoun.	National conservation.	Decree No. 3362/1972.
RasEnfeh	Enfeh.	N/A	
Salinas, wall promenade of Enfeh and	Enfeh.	N/A	

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[23] N/A: Information Not Available.

Site Name	Location/ Municipality	Conservation Status	Sources
Our Lady of Natour Monastery			
Heri - Chekka beaches	Chekka.	N/A	
	Heri.	N/A	
Offshore freshwater marine springs in Chekka	Chekka.	N/A	
Promontory cape and cliffs of RasShaqaa and Saydet El Nouriyeh Monastery	Hamat.	Recommended/proposed conservation - International conservation.	CDR/DAR/IAURIF, 2005; IMAC, 2009; MOE/IUCN/AECID, 2011; CDR/ECODIT/IAURIF, 1997.
Selaata terraces	Selaata.	N/A	
El Jawz River estuary	Koubba.	National conservation.	MOE, Decision no. 22/1998
Batroun National Marine Hima at the National Centre for Marine Sciences	Batroun.	National conservation.	MOA, Decision no. 129 of 1991.
Historical Center and Fishing Harbor of Batroun	Batroun.	N/A	
Beaches of Kfaraabida	Kfaraabida.	N/A	
Fadaous ancient tell	Kfaraabida.	None.	Recently discovered.
Medfoun rocky area	Thoum (kaemakamiyeh).	N/A	

APPENDIX II

Priority and Ranking of Ecologically Sensitive Areas in Lebanon
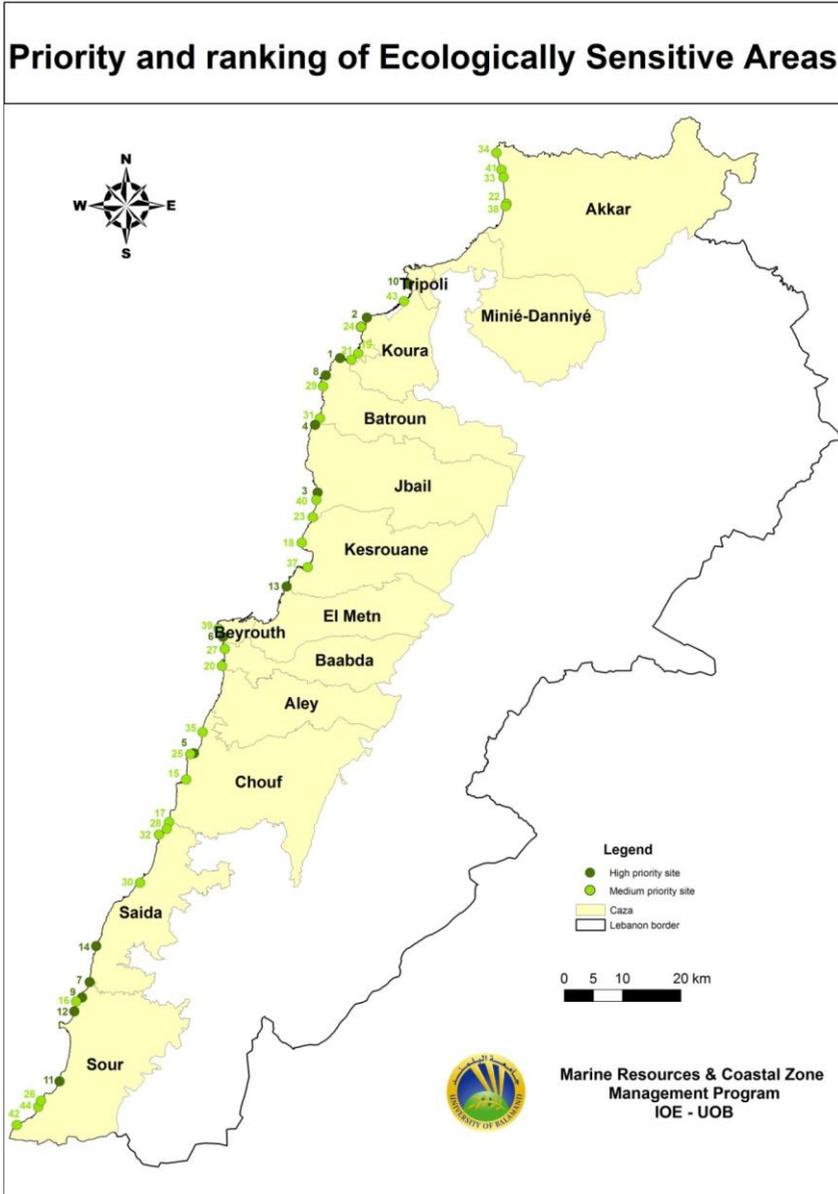
APPENDIX III

Priority and Ranking of Culturally Sensitive Areas in Lebanon
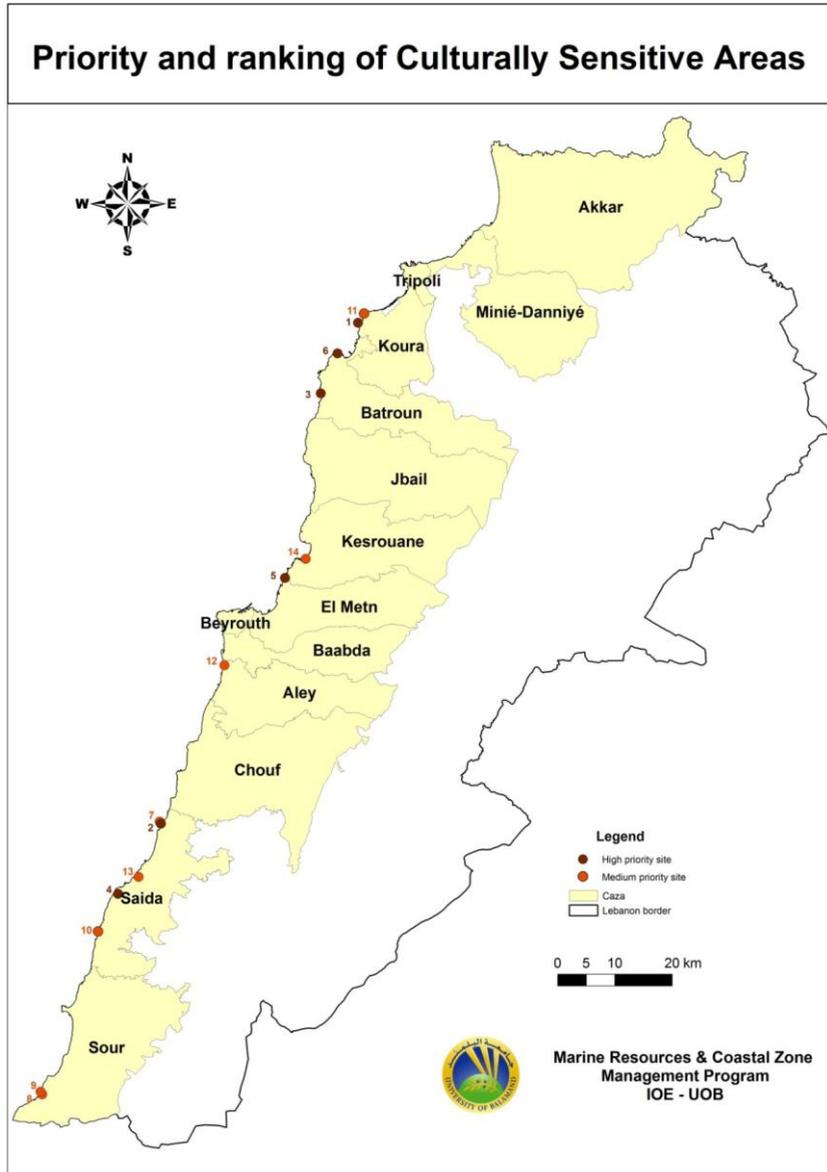
APPENDIX IV

Clustered high priority sites
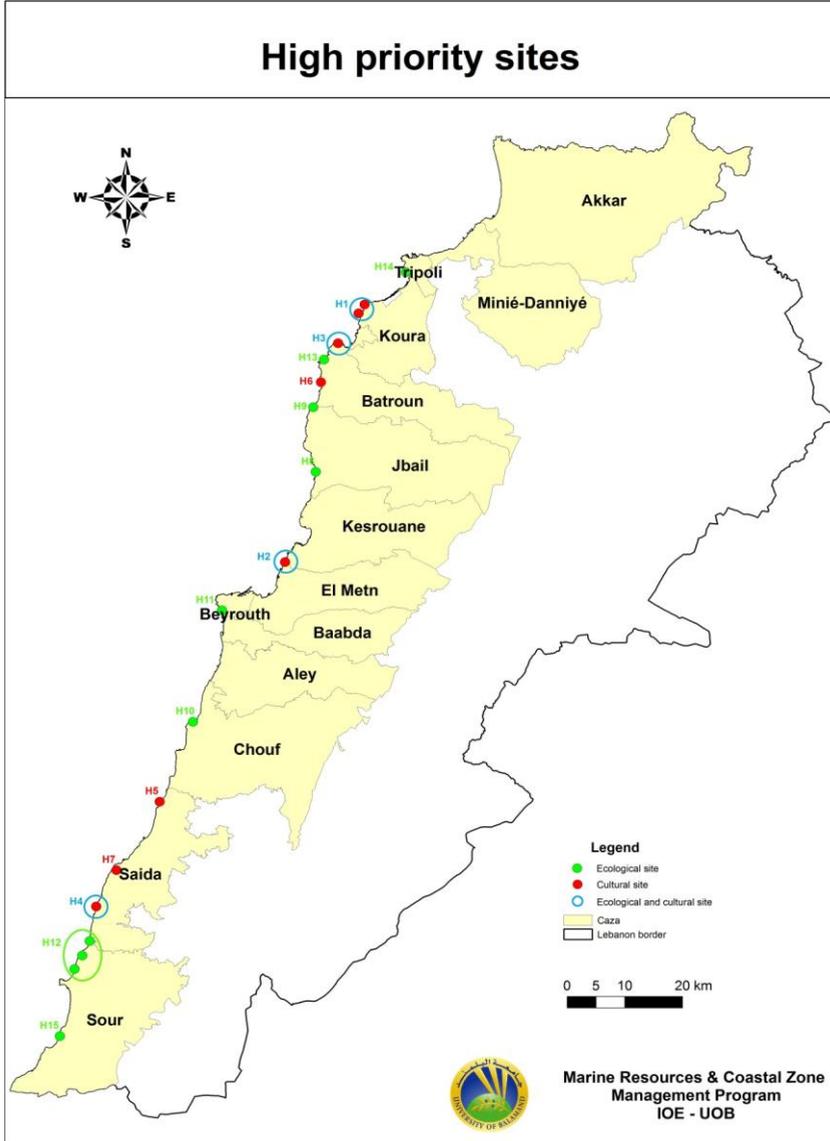
APPENDIX V

**Land Change Land Use (LCLU) change detection map
between 1998 and 2010 on the coastal zone of North Lebanon**
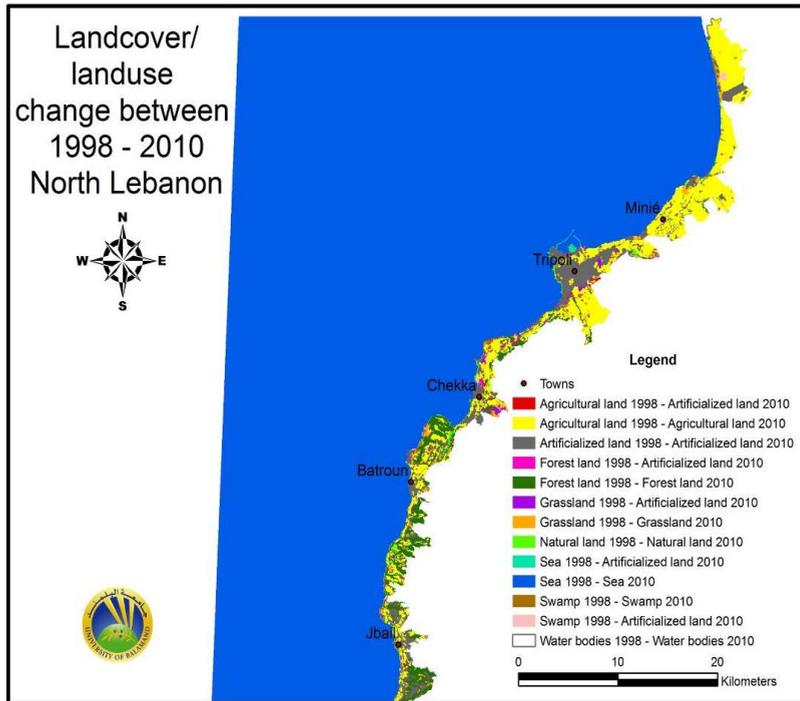
APPENDIX VI

Artificialized forested and agricultural land on the coastal zone between 1998 and 2010 at North Lebanon and other Mohafzat

Perentage of artificialized forested land on the coastal zone between 1998 and 2010 per Mohafazat

Series1, South, 278.1, 39%

0.2%

Series1, Mount Lebanon, 287.82, 40%

- Beirut
- Mount Lebanon
- North
- South

Series1, North , 153.9, 21%
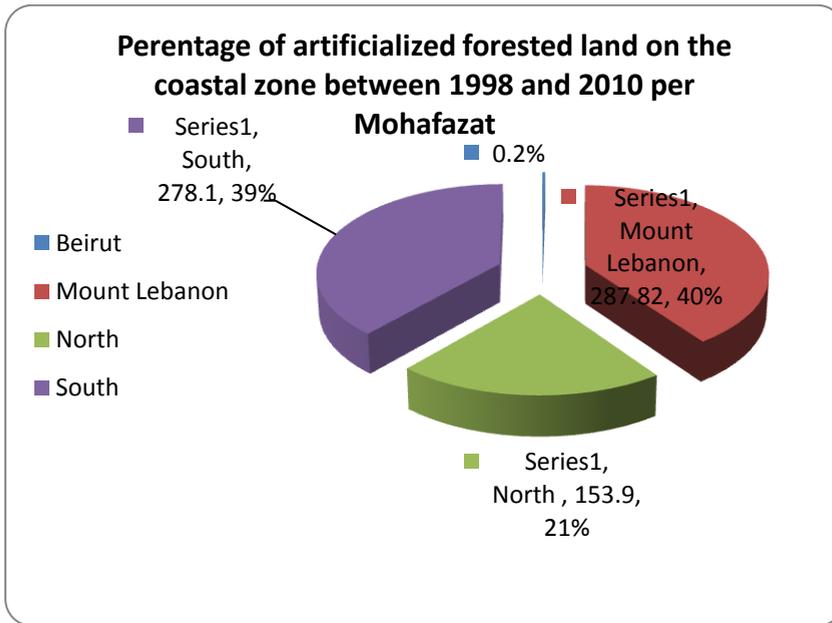
Precentage of artificialized agricultural land on the coastal zone between 1998 and 2010 per Mohafazat

Series1, South, 234.45, 49%

■ Mount Lebanon

■ North

■ South

Series1, Mount Lebanon, 88.74, 18%

Series1, North, 158.67, 33%
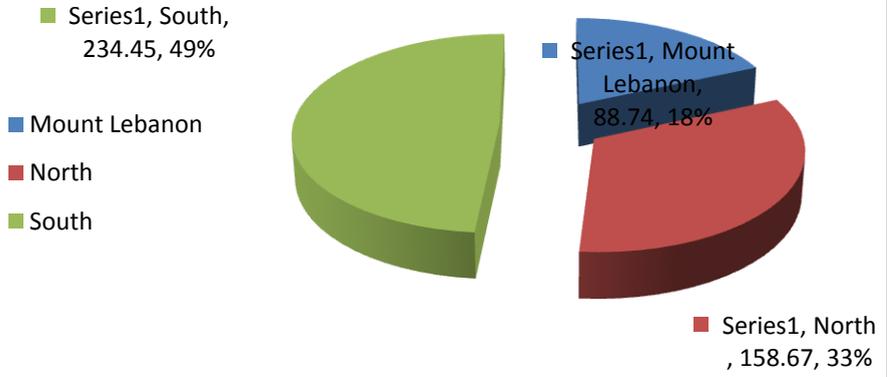
PART 1 – EXPOSURE AND SENSITIVITY

CHAPTER 5

EXPOSURE

Land Use and Land Degradation in Times of Violent Conflict[24]

George Mitri and Sahar T. Issa

Abstract: This Chapter 5 is the first of the selection of chapters empirically developing the concepts that were theoretically explored in Chapters 2 and 3. It initiates the book's Part 1 that is dedicated to empirical investigations of North Lebanon's exposure and sensitivity to armed conflict and its environmental effects. The chapter investigates exposure to environmental damage and land degradation in association with armed conflict. In this context, exposure to environmental damage depends on location, proximity to the source of threat, probability or frequency of the event, intensity, duration, and spatial impact. Overall, we argue that while recurrent armed conflicts directly and indirectly contributed to increased exposure to environmental damage and land degradation, other factors related to human activities could also worsen the environmental situation.

Keywords: Armed conflicts, exposure, environmental damage, land degradation

1. INTRODUCTION

In times of conflict, the environment falls at the bottom list of intervention priorities, while more focus is given to saving lives,

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[24] With permission of all publishers involved, parts of this chapter are based on: Issa, S.T. 2014. *A Glimmer of Hope? An Assessment of Vulnerability and Empowerment in the Coastal Area of North Lebanon*. PhD Thesis. Enschede: University of Twente.

reducing human sufferings, and responding to people needs (Shambaugh et al., 2001). However, the natural environment should be considered as a high priority due to the essential dependence of many communities on a healthy environment (Shambaugh et al., 2001).

Lebanon's history is marked with much turbulence, political instability, and recurring episodes of armed conflict. The various outbreaks of armed conflicts have had significant impacts in terms of fatalities and injuries, population displacement, insecurity, economic disruption, as well as direct and indirect impacts on the natural environment.

One of the recent Lebanon's armed conflicts, in which environmental impacts of war received global attention, was the 2006 Israel-Lebanon War. More specifically, the bombing of the oil tanks in Jiyyeh, and the resulting oil spill severely affected the marine and coastal environments in the eastern Mediterranean. Overall, this war resulted in substantial environmental degradation, later estimated to a value of USD 729 million (Das and Davidson, 2011). Eight years later, Israel was asked by the United Nations General Assembly to compensate Lebanon for $856.4 million in oil spill damages it caused during the July 2006 war. The vote asked Israel to offer "prompt and adequate compensation" to Lebanon and other countries affected by the oil spill's pollution. Yet, environmental damages created by many other episodes of conflicts and wars in Lebanon have received less attention.

It is worth noting that recurring episodes of armed conflicts in Lebanon proved to increase people's negligent behaviour towards their surrounding environment. This is worsened by other factors such as urbanization, the lack of environmental management, uncontrolled activities in various sectors, including industry, tourism, agriculture, and transport. Such activities are

exerting environmental pressure on Lebanon, particularly in its coastal areas (IMAC, 2009). Even though we acknowledge the significant impacts of daily human activities on the natural environment, we will only focus in this work on the environmental damage caused by armed conflicts.

In this chapter, we start with a literature review about environmental security and its association with armed conflicts. Then, we present a historical overview of the various episodes of armed conflicts in Lebanon with an emphasis in the following section on exposure to environmental damage. Afterwards, we focus on discussing the relationship between repetitive armed conflicts in North Lebanon and exposure to land degradation. The main conclusions of this chapter are highlighted in the final section.

2. ENVIRONMENTAL SECURITY: LITERATURE REVIEW

The concept of environmental security emerged in the early 1970s as part of the process of putting the environment on the international political agenda (Gleditsch, 1998). Since then, scholars have increasingly focused their efforts on examining the threats that can emerge from environmental disruption and their causal relationship with violent conflict (Graeger, 1996; Gleditsch, 1998; Stalley, 2003; Brauch, 2007). In the article *Environmental Security and Peace*, Jon Barnett (2007) defines environmental security as the *"ability of individuals to avoid or adapt to environmental change so that things that are important to their well-being are not sustainably negatively affected"* (Barnett, 2007:5).

The literature on environmental security can be divided into four broad categories of research (Graeger, 1996; Rønnfeldt, 1997; Selim, 2004; Renner, 2006; Barnett, 2007; Buhaug and

Theisen, 2012). The first category reveals how environmental degradation and scarcity can induce violent or non-violent conflict (Homer-Dixon, 1991; Elliott, 1996; Theisen, 2008). The second category associates resource wealth to conflict (Collier and Hoeffler, 2001; Le Billon, 2001; Humphreys, 2005). The third category addresses the impacts of armed conflicts on environmental degradation (Kanyamibwa, 1998; Westing et al., 2001; Khagram and Ali, 2006). Finally, the fourth category considers environmental peacemaking (Conca and Dabelko, 2002; Dabelko, 2006; Swatuk, 2004).

According to the literature, research on the environment as it relates to violent conflict largely focuses on the debate as to whether and why environmental degradation and scarcity, natural resource wealth, or dependence on natural resources can result in violent conflict (Baechler, 1998; De Soysa, 2002; Khagram and Ali, 2006; Bernauer et al., 2012). Less research has addressed environmental impacts of armed conflicts or the relationship between environment and peace. This highlights the need for further systematic and focused research on this aspect of the environmental security debate (Khagram and Ali, 2006).

Efforts to examine environmental impacts of armed conflicts date back to the 1970s when exploring the negative environmental effects of the Vietnam War (Westing 1971; Westing, 1972; Westing 1975; Westing, 2013). Al-Lihaibi and Ghazi (1997), Husain (1998), and Price (1998) later studied the environmental effects of the 1991 Gulf war. Kanyamibwa (1998) examined the influence of the Rwandan war on biodiversity and conservation. Draulans and Krunkelsven (2002) and Nackoney et al. (2014) investigated the impact of armed conflict on forest areas in the Democratic Republic of Congo. Other scholars have also offered empirical evidence of environmental effects resulting from armed conflicts (Rose, 1993; Dudley et al., 2002; Kengni, 2013).

Armed conflicts can have both direct and indirect environmental impacts (Partow, 2008). Direct impacts are those that result exclusively and directly from military activities, for instance, chemical spills, demolition waste from infrastructure destruction, pollution, land mines, natural resources destruction, as well as the destruction of habitats and loss of wildlife (Shambaugh et al., 2001; Al-Duaij, 2002; OECD, 2008; Partow, 2008). The environmental damage caused by such impacts is well documented in the literature (Price, 1998; Dicks, 1999; Ekanayake and Ofori, 2000; Leaning, 2000; Peterson et al., 2003; Gangolells et al., 2009; Corn and Copeland, 2010; Upton, 2011). Indirect impacts can be credited wholly or partly to the conflict and to related war economy. Such impacts encompass population displacement, absence of environmental governance, and the halting of development and conservation programs (Shambaugh et al., 2001; OECD, 2008; Partow, 2008). Displaced people and refugees can have significant effects on the environment and these aspects have been well covered in the literature (Kibreab, 1997; Urdal, 2005; Gomez and Christensen, 2010). Further, conflicts tend to aggravate already prevailing environmental issues. For instance, they can exacerbate inadequate agricultural practices and deforestation, and may cause desertification, drought, erosion, soil contamination and loss of fertility, as well as the disappearance of some species. Armed conflicts may also lead to the over-exploitation of natural resources for both basic survival and for commercial purposes. The irrational removal of natural resources causes food shortages and deforestation that can, in the longer term, have negative effects on the means of survival for local residents (Huseynov, 2011).

Environmental impacts also occur before and after armed conflicts for various reasons, often with subsistence, strategic, or commercial causes, and often for political, social, and economic reasons (Barnett, 2007). The pre-conflict phase, including military

preparation and training, poses several risks to the environment. Military activities also produce significant waste from the manufacture and storage of weapons, and from the usage of toxic substances (Al-Duaij, 2002). Post-conflict periods are often coupled with ongoing and sometimes even more serious environmental impacts in meeting requirements of country's reconstruction and population resettling programs. In addition, return of refugees to their homes often results in natural resources being over-exploited, and the breakdown of economic and environmental governance often disrupts waste collection arrangements, increasing pollution and risk of infectious diseases (Huseynov, 2011). Also, military waste poses a significant environmental problem by polluting the natural environment for many years.

Environmental destruction is unavoidable in times of armed conflict (Huseynov, 2011). The actual environmental impacts of armed conflicts depend on several factors such as type of conflict, its magnitude and duration, types of weapons and chemicals used, and ecosystems present in specific geographic locations (Leaning, 2000). Identifying the nature of conflicts is crucial to determining their impacts on local communities and the environment that surrounds them. This is critical to understanding political, social, economic, and environmental consequences, a necessary step towards developing mitigation strategies (Shambaugh et al., 2001).

3. A BRIEF HISTORICAL REVIEW OF ARMED CONFLICTS IN LEBANON

Lebanon has experienced a series of armed conflicts during the past four decades. These ranged from civil conflicts to full-scale wars. In this chapter, we focus on four significant episodes of armed conflicts. These included the 1982 Israeli Invasion, the

2006 Israel-Lebanon War, the 2007 Nahr El Bared Clashes, and the Tripoli Clashes of 2008. These specific episodes of armed conflicts were chosen due to their severe impacts on the study area in North Lebanon, particularly on natural environment and local communities.

After gaining independence from France, Lebanon committed to an unwritten National convention in 1943 for a power-sharing agreement according to a division's framework among the different religious sects, namely, Sunnis, Shi'a, Druze and Maronite Christians. Nevertheless, political tensions exacerbated after the Palestinian refugees' arrival in 1948. After its exclusion from Jordan in 1970, the Palestinian Liberation Organization (PLO) founded its activities in Lebanon. This move caused successive Israeli military interventions in 1973, 1978, 1981 and 1982 (Barakat et al., 2008).

In 1982, Israel started a full-scale invasion causing large-scale destruction and population displacement (Barakat et al., 2008). This event started on June 6, 1982 and persisted for approximately 11 months. Approximately 170,000 people died, over 800,000 individuals were displaced, and the material damage was estimated around US$ 12 billion (El Masri et al., 2001).

In July 2006, Israel started another war lasting for 31 days and resulting in massive loss of life and livelihoods. Over one million people were displaced, around 1,200 people died, and 5,000 individuals were injured. As a direct result of this war, several thousands of people lost their jobs or sources of livelihoods, and around 100,000 people emigrated. The economy was heavily affected in all sectors and infrastructure destruction was significant (UNDP, 2006).

On May 20, 2007, clashes exploded between the Lebanese army and an Islamist group called Fatah al-Islam in the Nahr el Bared Camp, a Palestinian refugee camp located in North

Lebanon. The camp was founded for Palestinians who escaped the 1948 Arab-Israeli War (UNRWA, 2008). The clashes continued for 105 days and resulted in a full destruction of the Nahr el Bared Camp, forcing the majority of the 27,000 Palestinian refugees, as well as resident Lebanese citizens from neighbouring areas, to move away from the targeted area and its surrounding. It was reported that 169 Lebanese soldiers, 287 insurgents, and 47 civilians died, and around 400 - 500 soldiers were injured (Chit, 2009).

In 2008, different rounds of armed clashes have started between the Alawites in Jabal Mohsen and the Sunni neighbourhood of Bab Al Tabbaneh. The first round of five month clashes started on May 7, 2008 causing social and economic disruption in Tripoli (International Crisis Group, 2010). The clashes in Tripoli have resulted in more than 190 deaths and 1,200 injuries since the start of the Syrian War in 2011 (Médecins Sans Frontières, 2013). In this work we consider the first round of armed clashes in 2008.

4. EXPOSURE TO ENVIRONMENTAL DAMAGE

Indicators used to measure exposure to environmental damage included location, proximity to the source of threat, probability or frequency of the event, its intensity, duration, and spatial impact (Issa et al., 2014).

The addressed episodes of armed conflicts in Lebanon differed in terms of nature, magnitude, and scale. In terms of location, most of the study area, namely the coastal area of North Lebanon, was affected in some way during the 1982 Israeli Invasion and the 2006 Israel-Lebanon. The Nahr el Bared Clashes in 2007 were located in Nahr el Bared Camp in the coastal area of North Lebanon and the 2008 Tripoli Clashes concerned two neighbourhoods located in Tripoli.

Proximity to armed conflict events is seen as an important variable of exposure. Even though the 2007 Nahr el Bared Clashes were focused within the Nahr el Bared Camp, adjacent municipalities were severely affected, in particular the six municipalities surrounding the camp: Bhanine, El Mhamra, Bebnine – Abde, Der Amar, Menieh, and Beddawi. It was also reported that other nearby municipalities, such as Qobbet Chamra and Klayaat, were also targeted during the clashes. Similarly, the 2008 Tripoli Clashes located between two neighbourhoods in Tripoli had direct impacts not only on Tripoli, but also on surrounding municipalities such as Beddawi. Thus, areas in proximity to armed conflict events incurred increased vulnerability to the deterioration of the natural environment (Issa et al., 2014).

The frequency and intensity of armed conflicts were also considered as important indicators. Frequency refers here to the number of armed conflict events in an affected area and intensity refers to nature of damage affecting the natural environment. The coastal municipalities of Akkar and Menieh were the most affected in terms of frequency and intensity. The seven coastal municipalities of Akkar (Arida, Cheikh Zennad, Tal Hayat, Klayaat, Qobbet Chamra, Bebnine-Abde, and El Mhamra) and the four municipalities of Menieh (Bhanine, Menieh, Der Amar, and Beddawi) were exposed to all four episodes of armed conflicts. In addition, these areas were severely impacted by the various events of armed conflicts, particularly the 2006 Israel-Lebanon War and the 2007 Nahr el Bared Clashes. The coastal municipalities of Akkar and Menieh areas suffered both direct and indirect environmental impacts. Direct impacts included an oil spill resulting from the 2006 Israel-Lebanon War, infrastructure and building damage resulting from both the 2006 Israel-Lebanon War and the 2007 Nahr el Bared Clashes, and land degradation resulting from the 2007 Nahr el Bared Clashes. The Iraqi

Petroleum Company (IPC) located in Beddawi municipality in Menieh area was damaged during the 1982 Israeli Invasion causing severe environmental impacts. The various indirect impacts included population displacement and severe impacts on agriculture and fisheries as result of the 1982 Israeli Invasion, the 2006 Israel-Lebanon War, the 2007 Nahr el Bared Clashes, and the 2008 Tripoli Clashes (Issa et al., 2014). Indirect impacts were greater than direct impacts in Akkar and Menieh since agriculture and fisheries were the most important sectors in these areas alongside trade (Issa et al., 2014). Fishermen and farmers were among the most vulnerable and poorest families, particularly in Akkar and Menieh areas which were considered among the poorest and most deprived areas in Lebanon (Hanafi, 2008; Mouchref, 2008).

Municipalities in the Batroun and Koura areas have been the least affected in terms of frequency and intensity (Issa et al., 2014). Batroun area includes seven coastal municipalities (Chekka, El Hery, Hamat, Selaata, Koubba, Batroun, and KfarAabida) and Koura area three municipalities that have a coastline (Ras Maska, Kelhat, and Enfeh). In terms of frequency, Batroun and Koura areas were exposed to two of the four armed conflicts: the 1982 Israeli Invasion and the 2006 Israel-Lebanon War. In terms of intensity, damage to natural environment was minor and not all municipalities were subjected to damage. For instance, a displacement of population as a result of the 1982 Israeli Invasion was only recorded in the city of Batroun. The oil spill during the 2006 Israel-Lebanon War affected most of the coastal municipalities. In addition, the tourism sector was affected in Batroun and El Hery although the impacts were observed over a relatively short period of time (Issa et al., 2014).

Tripoli area is composed of the municipalities of Tripoli, El Mina, and Qalamoun. The frequency and intensity of armed conflicts differed among the municipalities of this area. The

Tripoli municipality was exposed to four episodes of armed conflicts, whereas El Mina and Qalamoun municipalities were exposed to two episodes of armed conflicts, namely the 1982 Israeli Invasion and the 2006 Israel-Lebanon War. The intensity of armed conflicts was considered as moderate. As for the municipality of Tripoli, the impacts included the oil spill during the 2006 Israel-Lebanon War and population displacements during the 2006 Israel-Lebanon War, the 2007 Nahr el Bared Clashes, and the 2008 Tripoli Clashes. The latter caused infrastructural damage in the neighbourhoods where the clashes occurred. In El Mina and Qalamoun, the impacts included harm to the fishery and tourism sectors and population displacement as a result of the 2006 Israel-Lebanon War (Issa et al., 2014).

The combination of the different indicators, encompassing location, nature, onset, frequency, intensity, and proximity to armed conflict, revealed variation in exposure to environmental damage along the coastal area of North Lebanon. The results indicated that Akkar and Menieh areas received the highest level of exposure and Tripoli area received a moderate level of exposure, while Koura and Batroun areas received low levels of exposure (Issa et al., 2014).

5. LAND DEGRADATION

One of the main and common environmental impacts resulting from armed conflicts is land degradation. In this context, land degradation is recognized as a serious ecological and socio-economic concern due to its effects on environmental conditions and on local communities (Mitri et al., 2014). According to Mitri et al. (2014) environmental research related to effect of wars and armed conflicts on the biophysical environment is still limited in depth and fragmented.

The various events of armed conflicts in the coastal area of North Lebanon have resulted in severe impacts on land cover encompassing land reclamation from the sea, unplanned construction, new road systems, and quarrying (IMAC, 2007). Over the past four decades, around 1,020 ha of vegetation cover was lost, located mainly in Tripoli and its surroundings (Mitri et al., 2014). The highest rate of vegetation cover loss in the study area was between the years 2006 and 2007 (Mitri et al., 2014).

During the 2007 Nahr el Bared Clashes, agricultural land and greenhouses in municipalities adjacent to the Nahr el Bared Camp were directly affected by conflicts resulting in land degradation (Hanafi, 2008; Mouchref, 2008; UNDP & UNRWA, 2008). Apart from soil contamination and its environmental consequences, recurrent armed conflicts put socio-economic pressures on farmers including the loss of harvesting seasons and restricted access to lands. Land was left uncultivated throughout conflicts and, as a result, farming practices changed. Accordingly, some agricultural lands experienced increases in certain agricultural activities, adoption of excessive irrigation, and extensive use of pesticides in an attempt to recover losses. These lead eventually to increased risk exposure to land degradation (UNDP, 2007). Illegal seafront dumping sites and landfill activities had sprung up along the coastal area of North Lebanon following the earlier 1975 Civil War (IMAC, 2007). Around 265 ha of sea in different locations along the coastal area of North Lebanon have been transformed into land, mainly in Chekka, Tripoli, Bhanine, and El Mhamra. Most of these changes in the coastal area have occurred between 1984 and 2006 (Mitri et al., 2014). Illegal activities such as uncontrolled seafront dumping reflected lack of environmental governance as indirect impact of armed conflict, through the breakdown of law enforcement and order, and weaknesses in authorities' ability to control or

effectively manage resources during and after periods of armed conflict (Shambaugh et al., 2001; Huseynov, 2011).

Extensive quarrying activities along the coastal area of North Lebanon represented another example that reflected lapses in environmental governance. Such activities were mostly illegal and resulted from increased demands for construction materials due to an increasing population and needs for post-conflict reconstruction activities (IMAC, 2007; Mitri et al., 2014). Quarrying activities exerted pressure on the natural environment through changing land cover as well as damaging and destroying natural habitats and vegetation cover (IMAC, 2007; Mitri et al., 2014).

It was emphasized that mapping and monitoring land degradation is essential for designing and implementing post-conflict recovery plans and informed policy decisions (Mitri et al., 2014). Accordingly, Mitri et al. (2014) aimed at evaluating the effect of repetitive armed conflicts on land degradation along the coastal zone of North Lebanon using multi-temporal satellite data, desk study information, and field data. Modelling the effect of repetitive armed conflicts on exposure to land degradation comprised (1) assigning a composite land degradation index to cadastral units, and (2) mapping exposure to land degradation associated with repetitive armed conflicts (Mitri et al., 2014). Independent ratings for individual strata and synoptic scores for the entire cadastral unit were given. Ratings considered criteria such as level of change in vegetation cover, increase of population density, interruption of accessibility to land, damage to the landscape and distance to the conflict centre. An investigation of the results showed that a total area of 1,107 ha was classified as high exposure to land degradation. This corresponded to 9% of the total extent of the study area. Most of the lands associated with high exposure to land degradation were located across the municipalities of Menieh, El Mhamra and Bebnine - Abde north

of Tripoli. This explained the severe effect of the Nahr el-Bared armed conflict in 2007 on increased exposure to land degradation in those municipalities. Also, Tripoli and Beddawi (to the north of Tripoli) were exposed to high exposure to land degradation mainly due to (1) their closeness to conflict areas, (2) urban sprawl, (3) increase in population density and (4) unplanned incremental urban development at the edges of the cities.

Despite the fact that armed conflicts might directly and indirectly impact the natural environment through land degradation, the research done by Mitri et al. (2014) revealed that other factors such as increase in population number and urban sprawl, climate change, policies and politics, and lack of law enforcement, might also contribute to land degradation.

6. CONCLUSIONS

This chapter aimed at investigating exposure to environmental damage and land degradation in association with recurring episodes of armed conflicts. On one side, it was shown that exposure to environmental damage varied among the different geographical areas studied in function of location, proximity to the source of threat, probability or frequency of the event, its intensity, duration, and spatial impact. On the other side, it was shown that exposure to land degradation was a result of both direct and indirect impact of recurring episodes of armed conflicts. Indicators such as loss in vegetation cover, artificialized coastline, increase in population number, interruption of accessibility to agricultural land, damage to the landscape, distance to conflict centre, fire affected areas and vegetation recovery proved to be useful in explaining a number of aspects related to land degradation when using satellite remote sensing data in combination with field data. However, we acknowledge that recurrent armed conflicts are not the sole cause of

environmental damage and land degradation. Other factors such as increase in population number, urban sprawl, uncontrolled construction and planning, absence of environmental governance and lack of law enforcement, politics, and climate change can also lead to environmental damage and increase environmental vulnerabilities.

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CHAPTER 6

SENSITIVITY

Understanding Vulnerability in the Context of Armed Conflict[25]

Sahar T. Issa

Abstract: Building on the preceding Chapter 5, which focused on exposure, the current chapter investigates the manifestations of sensitivity to conflict and its environmental consequences in North Lebanon. Chapter 6 identifies features and manifestations of vulnerability that are particularly relevant to the coastal area of north Lebanon. It examines the spatial variation in vulnerability to armed conflict by means of the 'hazard-of-place' model by Cutter (1996). It is argued that the spatial variation of the effects of armed conflict on the natural environment and people's livelihoods is affected not only by exposure to the environmental damage caused by episodes of armed conflict but also by the sensitivity and coping capacity of the communities in the coastal area of north Lebanon.

Keywords: Sensitivity, armed conflict, environmental degradation

1. INTRODUCTION

Armed conflict and environmental degradation have a reciprocal relationship. While most armed conflicts result in some form of

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environmental degradation, pressure on the natural environment can also further exacerbate tensions and become a trigger for armed conflict. Environmental degradation coupled with other stress factors, such as unemployment, high levels of inequality, and weak governance, can aggravate poverty and social problems, thereby increasing individual and community vulnerabilities (Shambaugh et al., 2001; Khagram et al., 2003; Renner, 2006; Barnett, 2007; Huseynov, 2011). As such, the natural environment is directly associated with humans and their wellbeing, and particularly of the most impoverished, vulnerable, and least empowered (Khagram et al., 2003).

Most of the literature on environment and violent conflict focuses on the debate as to whether and why environmental degradation and scarcity, natural resource abundance, or a dependence on natural resources can induce violent conflict (Baechler, 1998; De Soysa, 2002; Bernauer et al., 2012). However, the environmental impacts of armed conflict and the effects of these environmental impacts on peoples' livelihoods are less researched in comparison to the other two themes (Khagram and Ali, 2006).

Lebanon's history is marked with much turbulence, political instability, and recurring episodes of armed conflict. The various outbreaks of armed conflict have had significant impacts in terms of fatalities and injuries, population displacement, insecurity, economic disruption, as well as direct and indirect impacts on the natural environment. According to the literature, environmental degradation reduces economic potential and human wellbeing and changes people's living conditions by rendering them more vulnerable (Dabelko and Dabelko, 1995). In Lebanon, social divisions are reflected in spatial heterogeneous clusters characterized by diverse political, religious, and ethnic affiliations. There are 18 known religious communities and there are various foreign population and ethnic groups (Das and

Davidson, 2011). This diversity makes Lebanon a good subject to study the spatial variation of vulnerability within its geographical areas since vulnerability research emphasizes the importance of profiling differential vulnerability, for systems, or their elements, are seldom equally vulnerable (Turner et al., 2003).

In this chapter, I identify the features and manifestations of vulnerability that are particularly relevant to the coastal area of north Lebanon and I examine the spatial variation in vulnerability in different geographical areas of this region within the context of armed conflict. I define vulnerability as the 'susceptibility of the communities of the coastal area of north Lebanon to environmental damage caused by episodes of armed conflict and their capacity to cope with threats or damage caused in that context'. The analytical framework is based on the 'hazards of place' model. The findings are based on 500 questionnaire surveys among citizens in the study area, 24 semi-structured interviews, 17 in-depth interviews with various stakeholders, and secondary literature.

In the next section, a brief literature review on 'vulnerability of place' concept is presented. Then, the findings are presented and discussed. The final section highlights the main conclusions of this chapter.

2.   VULNERABILITY OF PLACE

The inspiration for this chapter into understanding vulnerability, how it is manifested, and how it varies geographically within the study area stems from the 'Hazards of Place' theory as developed by Cutter (1996). When studying the 'vulnerability of place', 'place' is specifically highlighted in the context of "*people living in hazardous places or in places made to be hazardous, not through choice but through external social, political, and economic forces*" (Lewis and Kelman, 2010:193). Thus, the

inhabitants of a place often inherit and become subjected to the vulnerability of that place. According to Lewis and Kelman (2010), events that occurred in the recent or even the distant past of a certain place can affect not only the occupants of that place at the time they occurred, but also the inhabitants that follow: future generations for many years and maybe permanently. In addition, events that occur in a certain place may accumulate and through this become a manifestation of vulnerability of people, regardless of whether those people grew up there or moved in at a later stage. This is true not only for the inhabitants of a certain place, but also for people living in adjacent, proximate, and even distant areas. For example, displaced people and individuals who migrate as a result of vulnerability, or as a result of the manifestation of vulnerability in a disaster, can affect near or far communities through the 'vulnerability of place' from where they came (Lewis and Kelman, 2010).

As such, 'vulnerability of place' refers to people's vulnerability in a specific geographic location and identifies its casual structure, spatial variation, and possible means for its reduction (Cutter et al., 2000). It combines potential exposure and social response but within a specific area. This approach was first conceptualized by Cutter (1996) who developed the 'hazards of place' model of vulnerability. This model is exploratory in nature, and integrates both the physical and social aspects of vulnerability by tying them to specific places. Emphasizing the place offers the opportunity to study some of the fundamental social and physical characteristics that contribute to vulnerability, and also to evaluate their interaction and intersection (Cutter et al., 2000). 'Vulnerability of place' may change over time depending on variations in the risk, mitigation, and settings within which hazards take place.

The 'hazards of place' model was chosen as an analytical framework for various reasons. First, since the model combines

physical and social aspects of vulnerability, it sits at the intersection of the different models and theories used to study vulnerability. As such, it allows a more holistic understanding of vulnerability. Another reason for adopting this model is its focus on a specific geographic domain, which fits the purpose of this study that addresses a specific local area: the coastal area of north Lebanon. This approach will highlight the particular features of each area studied within the context of an overarching model. Third, the model recognizes the dynamic nature of vulnerability, and how small changes in its constituents can produce wider changes in 'vulnerability of place'. In addition, this model regards people as active participants within the vulnerability process with its emphasis on the importance of mitigation. Finally, Cutter's model encompasses a wide array of factors in providing an overview of vulnerability. It involves quantitative indicators such as age, education level, and gender, while also focusing on factors that are hard to assess and analyze using quantitative approaches. This necessitates the use of both quantitative and qualitative methods that lead to a better understanding of the topic being studied.

Based on the 'hazards of place' model of vulnerability, the interaction between risk and mitigation produces an initial hazard potential, which is affected by the social fabric and the geographic context (Cutter, 1996). The social fabric covers various demographic and socioeconomic features of the population in the area, in addition to the perceptions and experiences of the community regarding risks and hazards. The geographic context encompasses the geographic characteristics of the area as well as the exposure and proximity to hazardous events (Cutter et al., 2000). The interaction between the social fabric and the hazard potential generates a social vulnerability, while the interaction between the geographic context and hazard potential leads to physical vulnerability. 'Vulnerability of place' results from the

interaction between physical and social vulnerabilities (Cutter et al., 2000; Cutter et al., 2003). In this model, 'vulnerability of place' presents a feedback loop to the risk input and the mitigation of origin that allows an increase or decrease in both risk and mitigation, resulting in either increasing or decreasing vulnerability (See figure 5.1 taken from Cutter, 1996:536). From this perspective, the model is fundamentally dynamic and identifies the complex and continuously varying nature of vulnerability (See figure 5.1, taken from Cutter, 1996:536).

In measuring 'vulnerability of place', physical vulnerability is measured in terms of exposure. Indicators associated with exposure often involve proximity to the source of threat, the probability or frequency of an event, and its magnitude, duration, or spatial impact (Luers, 2005; Adger, 2006; Gallopín, 2006). Social vulnerability is often measured by the quality of settlements and infrastructure, special needs' population, socioeconomic status, gender, race, and similar facets (Cutter, 1996; Cutter et al., 2003, Bankoff et al., 2004).
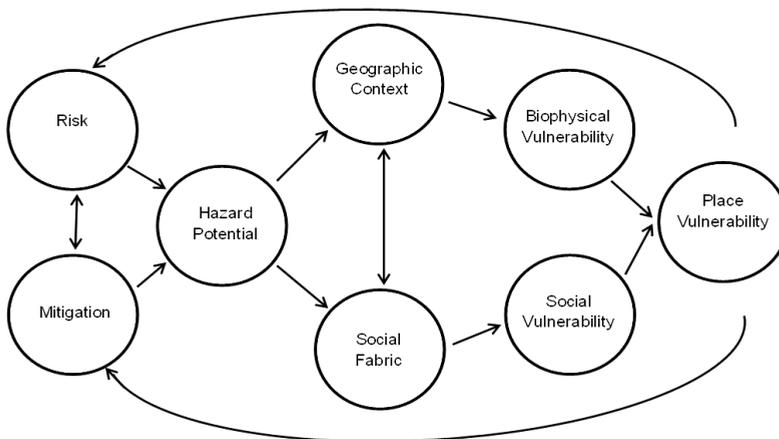
Figure 5.1: The 'hazards of place' model (Source: Cutter, 1996:536)

3. RESULTS AND DISCUSSION: VARIATION IN VULNERABILITY

The results showed variations in 'vulnerability of place' among the five geographic areas of the Lebanese northern coast. This can be explained by different combinations of factors encompassing physical and socio-economic aspects. The results obtained for physical vulnerability have been presented and discussed in details in Chapter 4 on exposure. In the next section, I will briefly present the main features of physical vulnerability. Then, the results and discussion on social vulnerability will follow. The results for physical and social vulnerability are then combined and integrated into the 'hazards of place' model to produce the 'vulnerability of place'.

3.1. Physical Vulnerability

In this chapter, physical vulnerability is assessed in terms of exposure to armed conflict. Location, nature, plus the onset, frequency, intensity, and proximity to armed conflict are important factors in determining vulnerability and are used as indicators in this research to measure physical vulnerability (Table 5.1).

Physical Vulnerability
Indicators
Location
proximity to the source of threat
Frequency of the event
Intensity or magnitude
Duration
Spatial impact

Table 5.1: Indicators used for assessing physical vulnerability

When considering these factors, the results show that Akkar and Menieh areas have the highest levels of physical vulnerability, with lower levels in Tripoli, Koura, and Batroun (Figure 5.2). Various episodes of armed conflict took place in the coastal area of north Lebanon, particularly in Akkar, Menieh, and Tripoli. For example, the 2007 Nahr el Bared Clashes took place in Nahr el Bared Camp and severely affected the surrounding municipalities. The frequency and Intensity of armed conflicts are also important factors. By frequency I refer to the number of armed conflict events in an affected area and by intensity to the nature of the *environmental damage* in the affected areas. The coastal municipalities of Akkar and Menieh districts were the most affected in terms of frequency and intensity with more episodes of armed conflict than in the other areas. The municipalities in the Batroun and Koura areas were the least affected in terms of conflict frequency and intensity.
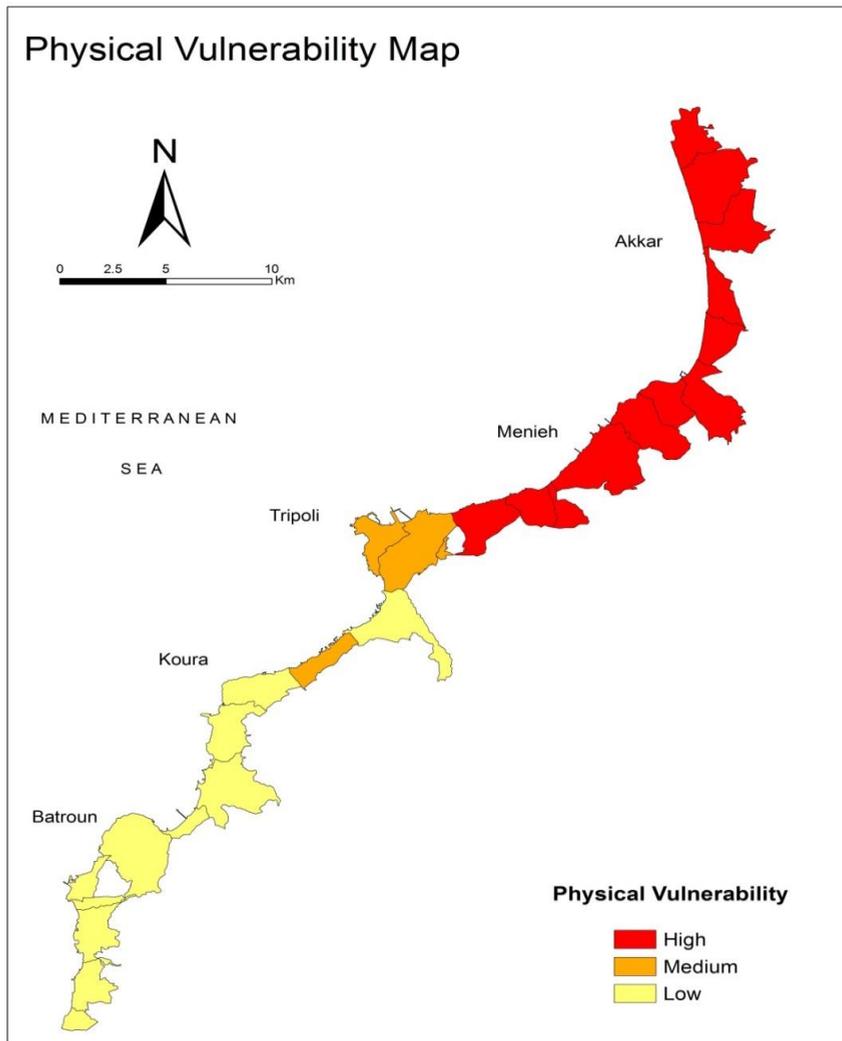
Figure 5.2: Physical vulnerability in the coastal area of north Lebanon[26]

3.2. Social Vulnerability

In order to assess social vulnerability, a social vulnerability index was calculated for each of the five areas using the standardization technique (Briguglio, 1995; Kaly et al., 1999; St. Bernard, 2007)

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[26] The author would like to thank Ms. Mireille Jazi for drawing the map.

also known as Min Max rescaling (Yoon, 2012). The indicators included in the index were age, number of household members, education level, access to information (Internet subscription, mobile subscription, landline subscription, and television ownership), material assets (home and land ownership), access to public services (access to water, electricity, and health insurance), occupation, income, and organization membership (Table 5.2). The vulnerability for each indicator in the dataset was calculated using the formula $V = (X - Xmin)/(Xmax - Xmin)$, where V is the degree of vulnerability arising from the indicator for each area, X is the value of the indicator included in the vulnerability index for each area, and Xmax and Xmin are the maximum and minimum values of the indicator across all five areas. This calculation results in a score between 0 and 1. This calculation was performed for each indicator to be included in the index, and then an average of all V's was calculated to give 'an index'. The index was calculated for each of the five areas (Akkar, Menieh, Tripoli, Koura, and Batroun). They could then be ranked, with a higher score indicating a lower vulnerability.

Social Vulnerability
Indicators
Age
Number of household members
Education
Internet subscription
Mobile subscription
Landline subscription
Television ownership
Home ownership
Land ownership
access to public services (water, electricity, and health insurance)
Occupation
Income
Organization membership

Table 5.2: Indicators used for assessing social vulnerability

The results (Table 5.3) showed that the coastal communities in Akkar area were the most vulnerable of those within the study area followed by those in Tripoli area. The coastal communities in Batroun area showed the lowest levels of social vulnerability, with Menieh and Koura areas showing medium levels of social vulnerability.

Area	Batroun	Koura	Tripoli	Menieh	Akkar
Social Vulnerability Index (SVI)	0.61	0.54	0.43	0.52	0.38

Table 5.3: Social vulnerability Index for each of the five areas of the Lebanese northern coast

The fact that the coastal communities in Akkar area show the highest level of vulnerability was also supported by findings from the semi-structured and in-depth interviews as well as in the secondary literature. Akkar area has been classified as one of the most deprived areas in Lebanon (Hanafi, 2008; Mouchref, 2008; Das and Davidson, 2011). The existing situation of deprivation in Akkar area results from a combination of various reasons. A full examination of these reasons is beyond the scope of this study although the most important reasons are discussed here. The foremost characteristic of this area was the persistence of feudal system until the early 1970s and this had a major influence on the socioeconomic situation in the area. A ruling elite of large estate landowners used to control powerless labourers and residents who used to work as sharecroppers on the feudal lands. The feudal nature of the society has now been replaced by wealthy and powerful families. In addition, Akkar area reveals all the typical characteristics of poor and marginalized rural communities, with poor infrastructure and low quality services in addition to other features such as limited sources of income and inadequate support from government and civil society (Mouchref, 2008). This situation is due to the centralized system operating in the country where most of the economic and development projects have

historically been focused on Beirut, with the peripheral areas being marginalized leading to unequal growth between the different areas of the country. This fact was emphasized during the interviews and survey, with most participants reporting that they felt neglected by the Lebanese government and marginalized from the rest of the country.

Another reason for this finding is the dependence of the communities in Akkar and Menieh on natural resources for income generation such as agriculture and fisheries, whereas areas such as Tripoli, Batroun, and Koura that depend on other economic sectors for income production are less impacted by environmental damage resulting from armed conflict and therefore show lower levels of vulnerability. The findings are consistent with the literature on vulnerability of place as addressed by Cutter et al. (2003) who explain that environmental change – as caused by episodes of armed conflict in this case - can result in a form of economic vulnerability for areas that rely on a single economic sector for income generation, particularly those that rely on natural resources such as for agriculture, fisheries, and tourism. This vulnerability is particularly evident in the areas of Akkar and Menieh where agriculture, fishing, and trade are the most important sectors. Fishermen and farmers are among the most vulnerable and poorest families in these areas, and were the most impacted as a result of armed conflicts (FAO, 2006; Mouchref, 2008). As an example, the 2006 Israel-Lebanon war resulted in fishermen along the northern coast, and in particular in these two areas, losing their only source of income as they were forbidden to go to sea during the period of conflict and further suffered from pollution caused by an oil spill (FAO, 2006; UNDP, 2007; World Bank, 2007). The clashes at Nahr el Bared in 2007 aggravated the situation. Fishermen from areas adjacent to the Nahr el Bared Camp were banned from going to the sea,

experiencing major loss of income and forcing them into debt and poverty (Hanafi, 2008; Mouchref, 2008).

Farmers in these areas experienced similar impacts. The 2006 Israel-Lebanon War and its aftermath caused large losses due to difficult access to agricultural lands, which made harvesting impossible and led to the degradation of crops, obstructions to the transportation of agricultural products and monopoly control of prices (FAO, 2006; Mouchref, 2008). The Nahr el Bared Clashes in 2007 had a more direct and severe impact on the farmers in this area. Agricultural lands, greenhouses, and roads were severely damaged, and farmers were unable to reach the fields resulting in crop deterioration. Transportation of products to the market was also hampered by the fighting. As a consequence, farmers lost their income from harvests for two successive years and found themselves in a downward spiral of debt (Mouchref, 2008). It is important to also mention that fishermen and farmers in these areas suffer from socioeconomic problems that frequently place them in a cycle of poverty and debt. For example, they often suffer from extreme weather conditions during winter which can result in losses in their only source of livelihood, leading to other problems such as difficulties in accessing medical care, low income, poverty, and lack of access to any training opportunities that might exist.

Further, the results also show that the areas with the highest levels of social vulnerability (Akkar, Menieh, and Tripoli) are showing increasing levels of social and economic problems such as violence, drugs, unemployment, robberies, children labour, schools drop-outs, poverty, and gender inequality. These problems in turn can increase a community's vulnerability and threaten human security.

Other factors that can contribute to vulnerability, and which were used as indicators to assess social vulnerability, are socioeconomic conditions, deficiency in access to resources

including knowledge, information and technology, inadequate access to political authority and representation, the type and density of infrastructure, social wealth including social networks and connections, individuals with special needs, the homeless, and seasonal tourism (Bankoff et al., 2004). Akkar and Menieh are classified as some of the most deprived areas in Lebanon (Hanafi, 2008; Mouchref, 2008; Das and Davidson, 2011). They present all the typical characteristics of poor and somewhat isolated rural communities, with weak infrastructure and low quality services. Other features such as limited income sources, low levels of education, and inadequate support from the government and civil society have produced a malicious cycle of poverty and increased the level of marginalization, thus increasing vulnerability. The social and economic marginalization of Akkar, which is remote from the economic and political centre of the country, is also due to the centralization that started in the late 18th century and continues to this day. As such, most economic and development projects in Lebanon have historically focused on Beirut, while areas on the peripheries have been marginalized, leading to unequal growth between the different areas of the country. This was emphasized during the interviews when most of the participants reported that they felt neglected by the Lebanese government and marginalized from the rest of the country.

In addition to the social sensitivity of these areas, the results showed a low level of coping capacity in all the five areas studied. To assess the coping capacity, the following indicators were used: perceptions regarding the level of preparedness to disasters, the presence of emergency plans, and the institutional capacity to deal with disasters. During the interviews, the heads or their representatives of the municipalities were asked about their perceptions of their institutional capacity to deal rapidly with the impact of a disaster, a violent conflict in this case, on affected environmental resources. They generally reported a very limited

or weak institutional capacity in all the five areas. According to local leaders and survey participants, the municipalities of Menieh and Batroun require expertise, personnel, and equipment. Most of the heads and their representatives noted that they suffer from low financial budget and from government negligence. Particularly in Akkar and Menieh, especially they are exposed to and affected by extreme weather conditions and armed conflict. When asked about their level of preparedness for disasters in general, and for conflicts in particular, all areas' leaders mentioned that there were no emergency plans to cope with armed conflict. However, the heads or their representatives of several municipalities, mainly those where agriculture was a major economic sector, recorded a higher level of preparedness to extreme weather conditions, especially in winter. In terms of the existence of any emergency plans, the interviews revealed that there were no emergency plans in Akkar, Menieh, Koura, and Batroun. According to the leaders of the municipalities in Batroun area, it is the government's responsibility to provide emergency plans and not the municipalities. The leaders of the municipalities in Menieh area noted that the lack of a financial budget and assistance were important reasons for not being prepared for disasters and for not having any plans. The findings show a low level of coping capacity, mainly due to the negligence and marginalization of these areas by the government, which, in turn, can increase people vulnerability.
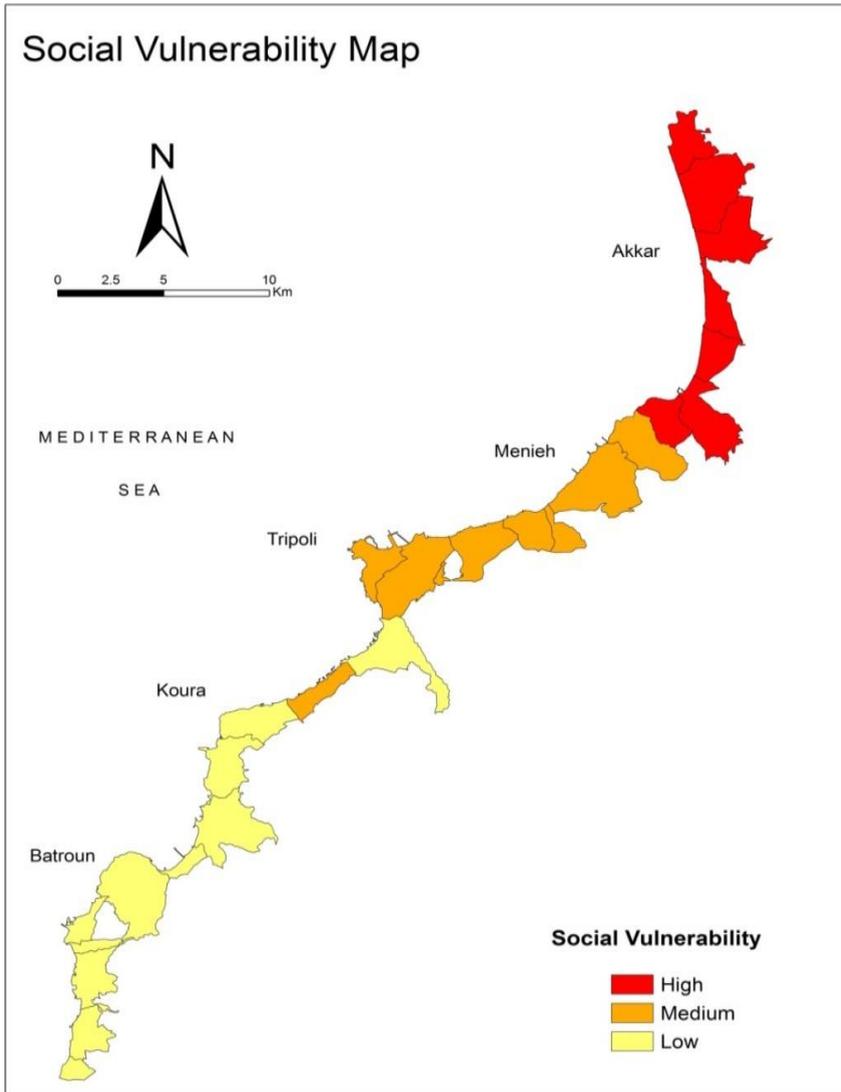
Figure 5.3: Social vulnerability in the coastal area of north Lebanon

3.3. From Risk to Vulnerability of Place

Based on the 'hazards of place' model, combining the results for physical and social vulnerabilities resulted in differences in 'vulnerability of place' among the five areas of the Lebanese northern coast as follows: Akkar and Menieh show the highest

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levels of vulnerability followed by Tripoli, with Koura and Batroun showing lower levels of vulnerability (figure 5.4).

According to the model, 'vulnerability of place' provides a feedback loop to the inputs of risk and mitigation, enabling an increase or decrease in both risk and mitigation, resulting in either increasing or decreasing vulnerability (Cutter, 1996). This argument is supported by the results, where areas such as Akkar, Menieh, and Tripoli that experienced an increase in, or several episodes of, armed conflict showed an increase in vulnerability. In addition, in these areas there is a lower level of mitigation and preparedness for risks than the other areas. As such, these areas need to increase their mitigation processes in order to decrease their vulnerability. However, other areas such as Koura and Batroun who have experienced fewer episodes of armed conflict showed a lower level of vulnerability than other areas but also low levels of mitigation.

It is also important to observe that the model suggests that a higher level of 'vulnerability of place' can increase the risk of armed conflict. This means that areas such as Akkar, Menieh, and Tripoli have a greater risk of armed conflict than other areas. An examination of recent political events in these areas, which show higher levels of violence due to armed conflict, supports this with the recent clashes in Tripoli being a good example. However, vulnerability is not the only trigger for armed conflict. While a high level of vulnerability can create a situation that increases the risk of armed conflict, other reasons can also cause conflicts or potential conflicts such as the political situation in the country or spillovers from the war in Syria. However, this study does not address the reasons and factors that can trigger armed conflict.
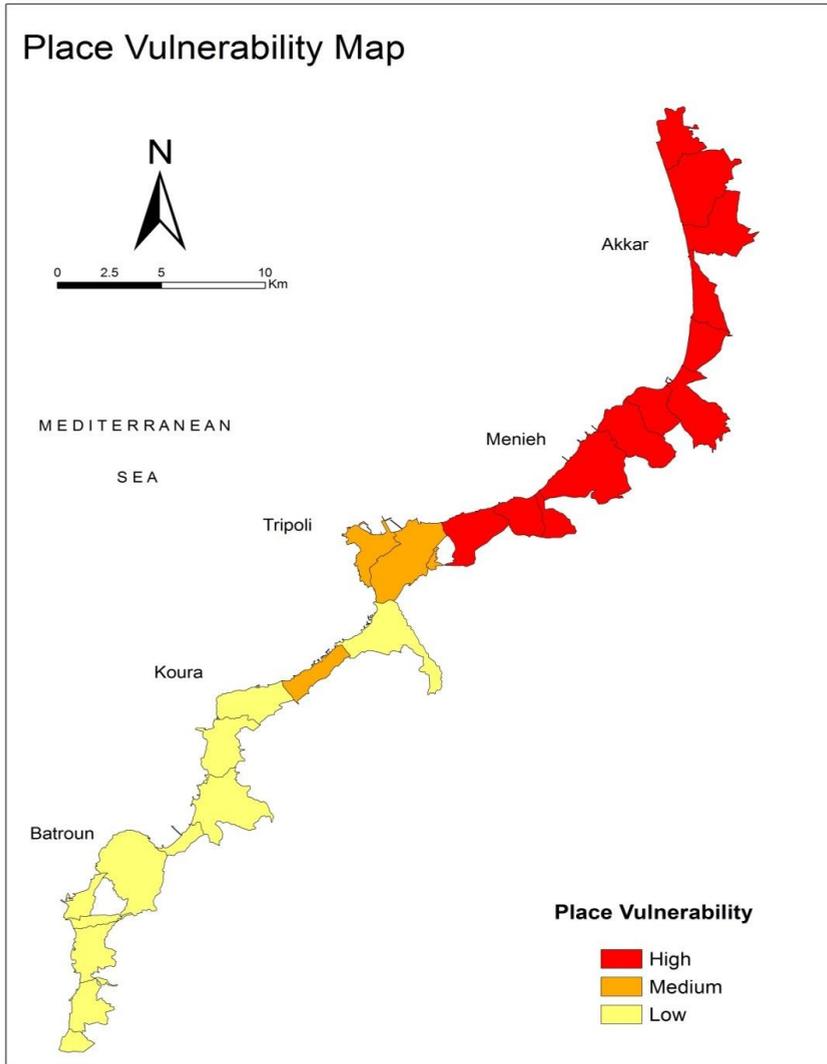
Figure 5.4: Vulnerability of place in the coastal area of north Lebanon

4. CONCLUSIONS

This chapter has assessed and identified the spatial variation in communities' vulnerabilities to the deterioration of the natural environment caused by various episodes of armed conflict within five coastal areas of north Lebanon. Results showed that the

variation of vulnerability does not only result from exposure to armed conflict but also from existing conditions including the sensitivity and coping capacity of the communities.

The areas of Akkar and Menieh showed the highest levels of vulnerability followed by Tripoli. In comparison, Koura and Batroun areas showed lower levels of vulnerability. In other words, the areas that were most exposed to the episodes of armed conflict and were most impacted by the consequent environmental damage (Akkar, Menieh, and Tripoli) have higher levels of vulnerability than the areas of Koura and Batroun which experienced fewer episodes of armed conflict. However, exposure and magnitude are not the only factors that affected 'vulnerability of place' in these areas. Other factors such as existing socioeconomic and political conditions as well as coping capacity affect vulnerability. In addition, the findings showed that the areas with high levels of social vulnerability, notably Akkar, Menieh, and Tripoli, have seen an increase in social and economic problems such as violence, drugs, unemployment, robberies, and poverty. I also saw that low levels of coping capacity to deal with disasters, and particularly with armed conflicts, in terms of preparedness, presence of emergency plans, and institutional capacity to deal with disasters in all five areas. Combining the results for the physical and social aspects of vulnerability, it was possible to identify variations in 'vulnerability of place' among the five areas along the coastal area of north Lebanon. Akkar and Menieh were found to have the highest levels of 'vulnerability of place' followed by Tripoli, with Koura and Batroun showing lower levels of vulnerability.

The model used in this chapter provides a holistic understanding of vulnerability by combining both the physical and social dimensions of vulnerability and recognizing the complex interactions between them. In addition, the focus on place is quite an innovative approach because it emphasizes the exceptional

features that are unique to every area, as shown by the results of this research. The coastal area of north Lebanon is a good illustration of how vulnerability can vary within a relatively small area, hence highlighting the uniqueness and exceptional features of the areas under study.

While the concepts of vulnerability and resilience have to an extent been addressed in the literature, they have not been systematically studied in the Lebanese situation, particularly not from the approach and context used in this thesis. As such, the approach used and the obtained results provide innovative insights in the academic debate on vulnerability, and offers an in-depth and interdisciplinary analysis of the complex relationship between the conflict, the natural environment, and vulnerability.

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CHAPTER 7

VULNERABILITY

Measuring Political Vulnerability through the Human Development Index

Roula Al Daïa

Abstract: Marking the last chapter of Part 1 of this book, Chapter 7 combines insights from Chapters 5, on exposure, and 6, on sensitivity, to develop a comprehensive approach to vulnerability from the perspective of human development. Taking the 2014 Human Development Report (HDR) as a stepping stone, the chapter identifies and discusses the change in rankings of countries when governance indicators are incorporated into the Human Development Index (HDI) to obtain a Modified Human Development Index (MHDI). Several indexes are calculated, taking into consideration various weighing options. However, emphasis is placed on MHDI2, which gives an equal weight to all considered dimensions (income, health, education and governance). Over a period from 2005 to 2012, discrepancies were found between the HDI and MHDI2, which implies that governance plays an important role enhancing or reducing human development. Ultimately, the chapter argues that the analysis of the MHDI2 during this period reflects the impacts of governance shocks better than HDI.

Keywords: Vulnerability, Human Development Index, Governance Indicators, Modified Human Development Index

1. INTRODUCTION

This article aims to construct an indicator accounting for a country's vulnerability to the general governance and political

context, and more specifically the impact of governance on human development. The literature on vulnerability is broad; and it targets several dimensions, often with an emphasis on natural hazard. There seems to be more than twenty-five definitions of vulnerability (Birkmann, 2006). In this respect, Birkmann (2006) emphasizes a paradox: 'we aim to measure vulnerability, yet we cannot define it precisely' (Birkmann, 2006:11). The UN/ISDR (United Nations International Strategy for Disaster Reduction(UN/ISDR) defines vulnerability as 'the conditions determined by physical, social, economic and environmental factors or processes, which increase the susceptibility of a community to the impact of hazards' (UN/ISDR, 2004:16). In other instances, vulnerability is defined as 'potential for attributes of a system to respond adversely to the occurrence of hazardous events" (Kaly et al, 1999:17). Guillaumont (2008) defines (economic) vulnerability as the resultant of the following influences: size and frequency of exogenous shocks, exposure to shocks, and the capacity to react to shocks or resilience. Very often, the concepts of vulnerability and resilience and largely interconnected, with economic resilience defined as the ability to 'recover quickly from a shock and withstand the effect of a shock' (Briguglio et al., 2008:5). Measuring vulnerability has proven to be a challenge; and several measures have been proposed.

The next section (section 1) presents a literature review including a brief review of vulnerability measures as well as related concepts. Section 2 presents the methodology based on a new vulnerability definition; as well as the rationale behind the proposed index. It also reports the result of the correlations, rankings and calculations. Section 3 concludes with an overview of the main results as well as considerations regarding the use and suitability of the proposed index.

2. LITERATURE REVIEW

2.1. Governance, Armed Conflict And Economic Performance

The relationship between an institutional setting and economic performance has been investigated in the literature. For instance, Rodrik (1998) finds that democracies exhibit a better performance in terms of less randomness and volatility, better shock management and more desirable distributional outcomes. Rivera-Batiz (2002) uses an endogenous growth framework to show that democracy (with its positive governance implications) is an important determinant of total factor productivity.

More generally, the political context cannot be dissociated from economic performance since political components are actually an important component affecting the economic growth of a country. For instance Jong-A-Pin (2009) developed a growth model showing the impact of political instability in the long run on economic growth. Glick and Taylor (2010) studied the impact of war on international trade and concluded that it had a highly disruptive impact in this respect.

Focusing on armed conflict, which is a situation epitomizing political instability, it was found to have a major disruptive impact on economic growth. In this perspective, Collier et al. (2003) provide an extensive review of the impact of armed conflict. Among the impacts, they emphasize the following: an increase in military expenditures which leads to resources being diverted from productive uses and therefore a negative impact on GDP, the destruction of infrastructure and facilities, increased risk of murder, slower growth, fatalities and population displacement, persistence in capital flight, even after the conflict has ended, persistence in loss of social capital and corruption, regression in terms of political indicators, deterioration in the political situation,

an increase in the mortality rate, more diseases and psychological trauma.

Some of those effects have been already highlighted theoretically by Collier (1999) who also emphasized the dissaving effect. In the same paper, the author has also highlighted the adjustment of the capital stock through capital flight. It is worth noting that these contribution come in the wake of Collier and Hoeffler (1998) who investigated the impact of four variables on the occurrences and the duration of civil war. They found a negative relationship between income and the risk of civil war, a non-monotonic effect of natural resource endowments on the occurrence of armed conflict (higher resources means higher risk of conflict at the beginning then limited risk of conflict later on), and larger population also increases the risk of civil war. Finally, ethno-linguistic fractionalization is significant, however more fractionalized societies are not more prone to armed conflict.

2.2. Vulnerability Literature

Exposure to shocks is often referred to in the literature through the concept of vulnerability. In this section I discuss a number of the indices that were developed to measure vulnerability. However, vulnerability literature often focuses on economic vulnerability as well as environmental vulnerability, which differ from vulnerability to armed conflict, and the focus of vulnerability literature seems to be on Least Developed Countries and Small Island Developing States.

Several vulnerability indicators can be found in the literature. In a seminal article, Briguglio (1995) proposed to build a Economic Vulnerability Index (EVI) for Small Island Developing States (SIDS). Three variables have been included: exposure to foreign economic conditions (measured as the ratio of exports and imports to GDP), insularity and remoteness (measured as ratio of transport and freight costs to exports

proceeds), and proneness to natural disasters (therefore civil strife is not included) This index showed that SIDS tend to be more vulnerable than other countries according to the proposed index.

In the same line of thought, another Economic Vulnerability Index was calculated by Guillaumont (2008). It is composed of an exposure index (accounting for smallness, location and specialization) and a shock index (accounting for natural shocks and trade shocks). Results show that Guillaumont's EVI is higher in the LDCs relative to other group of countries (except SIDS), and does not show any tendency to decrease.

On national levels, Adrianto and Matsuda (2002) propose the calculations of economic vulnerability indices for small islands from environmental disasters with an application to Japan. Cutter, Boruff and Shirley (2003) propose a social vulnerability index to environmental hazards and apply it to US counties. They conclude that 'those factors that contribute to the overall score often are different for each county, underscoring the interactive nature of social vulnerability—some components increase vulnerability; others moderate the effects' (Boruff et al., 2003:242). Cutter and Finch (2008) further find that in the case of the United States, there was evidence that vulnerability to natural disasters has become more dispersed through time between 1960 and 2000, along with a steady reduction even though important regional variabilities still remain. In addition, major factors affecting vulnerability are urban density, race/ethnicity and socio-economic status.

Further applications of vulnerability can also be found in the case of food insecurity and climate change (Bohle et al., 1994) and the environment. In the latter case, an environmental vulnerability index was proposed and constructed (Kaly et al., 1999) for SIDS. The three criteria included risks to the environment (natural and anthropogenic), the innate ability of the

environment to cope with the risks (resilience) and ecosystem integrity (the health or condition of the environment as a result of past impacts).

In the same line of thought, Peduzzi et al. (2009) developed a model for human losses and computed a Disaster Risk Index. They found that human vulnerability can be linked to the level of development of a country as well as the quality of its environment.

In addition, Yoon (2012) considered the relationship between social vulnerability and disaster losses in the Gulf of Mexico and Atlantic coastal areas. The author emphasized that the construction of vulnerability indices can be classified between inductive and deductive aggregation methods. His results show that 'coastal counties with more vulnerability in terms of social achieved status are positively associated with disaster damages, while variations in the development of the index using deductive and inductive measurement approaches produce different outcomes' (Yoon, 2012:823).

While most of these authors focus on vulnerability, others take the resilience point of view; economic resilience is defined as the ability (provoked by more or less adequate policies) of an economy to rebound after exogenous shocks stemming from economic openness (Briguglio et al., 2008). They argue that 'economic well-being of nations is more dependent on man-made policies than on inherent vulnerabilities. The results also confirm that adequate policy approaches can be used to successfully overcome the handicaps posed by vulnerability' (Briguglio et al., 2008:13). Therefore, they propose a resilience index with four principal components: macroeconomic stability, microeconomic market efficiency, good governance and social development.

All vulnerability indexes presented above focus on either economic or natural disaster aspects; but none takes into

consideration political factors, which, when they change, are a source of exogenous and endogenous shocks to economics. Civil wars, bordering conflicts all have an impact on countries and societies and it makes sense to include them. Very few records can be found about the integration of armed conflict in. in this respect, Cortez and Kim (2012) examine the possibility of including armed conflict as a criterion for the identification of least developed countries in the EVI and that conflict is currently included in indirect ways. They find that the explicit inclusion of a conflict indicator does not significantly change the classification of LDCs.

2.3. The Human Development Index as a Vulnerability Indicator?

On a more global level and in the field of economic development, the most important indicator that comes to mind is the Human Development Index (HDI) developed by A. Sen and adopted by the United Nations Human Development Report (HDR) (UNDP, 1990). The underlying principle is the central concept of developing people's capabilities. According to the first Human Development Report (UNDP, 1990), the capability of a person represents different combinations of functioning that a person can achieve. The functioning refers to the important things that a person can do or be (such as being well-nourished, living long, interacting within a community). Therefore, enlarging a person's choice translates into enhanced capacities.

Furthermore, developing capabilities goes through developing human resources and economic opportunities where people can use those capacities. In its formulation, The HDI has three main components; emphasizing three central dimensions: education, health and income. The Human Development Report proposes augmentations based on gender and inequality. (UNDP, 2010) This indicator has been extensively quoted, used, criticized

in the development literature. For instance, Noorbakhsh (1998) proposed improvements on the HDI, therefore resulting in a set of alternative indices which appeared to perform well in terms of index properties of lack of redundancy. Further augmentations of the HDI were proposed by Ranis, Stewart and Samman (2005) incorporating notably political components. Cheibub (2010) discussed the inclusion of "political capabilities" in the HDI. Gamlath (2013) proposed a "Modified Human Development Index" incorporating the Worldwide Governance Indicators developed by Kaufmann, Kraay and Mastruzzi (2010a).

The linkage between human development and vulnerability is implicitly inferred from the above review, since part of measuring vulnerability is about unveiling gaps and weaknesses for better prevention and policy responses. The first formal linkage to be established between Human Development and Vulnerability (to the author's best knowledge) can be found in the Human Development Report 2014 which states that 'Vulnerability threatens human development - and unless it is systematically addressed, by changing policies and social norms, progress will be neither equitable nor sustainable' (UNDP, 2014:10). In addition, the report considers that approaching human development would not be complete if vulnerability and resilience issues are not addressed. The report also mentions several type of shocks causing vulnerability, including natural hazards, financial crises; and places emphasis on political dimensions of shocks and armed conflict.

The 2014 Human Development Report does not propose a new measure for human vulnerability. The main objective of this section is to construct an indicator that integrates both components of development and governance. In this perspective, the composite indicators are largely inspired by the work of Gamlath (2013) who incorporated governance measures into the HDI. However, unlike Gamlath (2013), several measures will be

constructed with different weights being attributed to components of the index. In addition, the evolution of the calculated indices will be traced over the 2005 – 2012 period in order to map out the change in rankings that result from different calculations relative to the change obtained from HDI. The dynamics of vulnerability and its impact are especially important because:

> When individuals face vulnerability and when their lives are persistently restricted in the wake of a shock, their capabilities may be harmed over the long term […] Vulnerability reflects threats to choices and capabilities. If human development is about widening choices, human vulnerability stems quintessentially from a restriction of the choices critical to human development—choices for health, education, command over material resources and personal security. (UNDP, 2014:18, 23).

3. METHODOLOGY: TOWARDS THE DEVELOPMENT OF A NEW INDEX

Therefore, in this section I propose a new definition of vulnerability, incorporating the two major concepts of capabilities and vulnerability: vulnerability is defined as the potential loss in capabilities following a shock, whether exogenous or endogenous. The capabilities according to this definition therefore encompass four main components:

- The three traditional components of HDI: income, health and education
- A governance dimension index

Concerning governance indicators, the World Wide Governance Indicators[27] proposed by Kaufmann, Kraay and Mastruzzi were adopted. They are six: voice and accountability, political stability

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[27] http://info.worldbank.org/governance/wgi/index.aspx#home retrieved August, 2014

and no violence, regulatory quality, rule of law, government effectiveness and control of corruption. (Kaufmann, Kraay and Mastruzzi, 2010a). The definition of each component is reproduced in the below box.

Box 1. <u>The Six Governance Indicators and Their Definitions</u>

1. Voice and Accountability (VCA): capturing perceptions of the extent to which a country's citizens are able to participate in selecting their government, as well as freedom of expression, freedom of association, and a free media
2. Political Stability and Absence of Violence/Terrorism (PV): capturing perceptions of the likelihood that the government will be destabilized or overthrown by unconstitutional or violent means, including politically-motivated violence and terrorism
3. Government Effectiveness (GE): capturing perceptions of the quality of public services, the quality of the civil service and the degree of its independence from political pressures, the quality of policy formulation and implementation, and the credibility of the government's commitment to such policies
4. Regulatory Quality (RQ): capturing perceptions of the ability of the government to formulate and implement sound policies and regulations that permit and promote private sector development
5. Rule of Law (RL): capturing perceptions of the extent to which agents have confidence in and abide by the rules of society, and in particular the quality of contract enforcement, property rights, the police, and the courts, as well as the likelihood of crime and violence
6. Control of Corruption (CC): capturing perceptions of the extent to which public power is exercised for private gain, including both petty and grand forms of corruption, as well as "capture" of the state by elites and private interests

Source: Kaufmann, Kraay and Mastruzzi (2010a:4)

These indicators are constructed in such a way that they range from very low governance (-2.5, but it can go even below that) and very high governance (corresponding to a value of +2.5 or

above). The methodological details about the construction of these indicators can be found in Kaufmann, Kraay and Mastruzzi (2010a).

Next step is to construct a composite governance index using the six indicators. The first step is to normalize each indicator using the below formula:

$$X_{it} = \frac{x_{it} - x_{min}}{x_{max} - x_{min}}$$

Where X_{it} is the normalized value of a given indicator and x_{min} and x_{max} represent the minimum and maximum possible values, taken at (-3) and (+3) respectively, following Gamlath (2013). The normalized indicators are represented by the symbols shown in table 1.1. The closer the indicator is to one, the better is the performance in terms of the considered dimension of governance.

Indicator	Symbol of Normalized Value
Voice and Accountability	VA
Political Stability and No Violence	PSNV
Regulatory Quality	RQ
Rule of Law	RL
Government Effectiveness	GE
Control of Corruption	CC

Table 7.1. Vulnerability Indicators Symbols

Then a composite index was constructed by taking the geometric mean of the above normalized indicators. This index was called the WGI for World Governance Index.

$$WGI = \sqrt[6]{VA.PSNV.RQ.RL.GE.CC}$$

Aggregation might be problematic, especially if one considers the critiques that have been addressed to these indicators. The six components of WGI have been criticized in the literature, most

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notably by Langbein and Knack (2010) who find that the six indicators 'appear to be measuring the same broad concept' (Langbein and Knack, 2010:350). Thomas (2010) considers that the indicators lack construct validity. Criticisms were however answered by Kaufmann, Kraay and Mastruzzi (2010b, 2010c). Others critics have also previously been addressed by the authors (Kaufmann, Kraay and Mastruzzi, 2007). In the case of the present article, should one view or another prevail, the calculated index is representative of either the average of a broad concept or a composite indicator of several facets of governance.

Calculations were then performed for all countries and all years. The figures in annex 1[28] trace the evolution of the WGI index for a large sample of countries between 1996 and 2012. Overall, there is no clear trend as to the evolution of governance worldwide and this could be attributed to the fact that governance is an institutional quality that takes decades to construct. Some countries have occasional peaks, which might be due to political shocks or sudden changes in governance.

The next step – the central piece of the methodology – was to construct a composite index taking into consideration both components of human development and governance in accordance with the new integrated definition of vulnerability and capabilities. This resulted in the calculations of four development indices. These have been named MHDI (Modified Human Development Index using the same terminology as Gamlath (2013)). There are four of them: MHDI1, MHDI2, MHDI3 and MHDI4. All four indices are a combination of HDI and WGI, with different weights.

Calculations were performed for a consistent set of countries covering the period 2005 till 2012. The reason behind

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[28] The annexes referred to in the text are available via the author (roula.aldaia@balamand.edu.lb) or editors (stel@msm.nl).

choosing this time span is to take into consideration the latest HDI dataset issued by the UNDP's Human Development Report[29] for consistency purposes and to be able to include the largest sample of countries. For instance countries with missing values of WGI or HDI were dropped from the sample in order to make it possible to make consistent comparisons in the change in ranking across all indexes. Therefore, a common set of 171 countries with governance and HDI data has been identified, for years 2005, 2008, 2010, 2011 and 2012.

Going back to the computation of the MHDIs, in the first approach, the index is assumed to be a broad measure of development regardless of its components. Hence, this approach calculates an indicator named the MHDI1 as the geometric mean of HDI and WGI. Therefore:

$$MHDI1 = \sqrt{HDI.WGI}$$

In the second approach, governance is seen as one component of the modified human development index with the same weight as the other components, namely, education, health and income. Therefore, the MHDI2 (Modified Human Development Index 2) is calculated as follows:

$$MHDI2 = HDI^{3/4}.WGI^{1/4}$$

Since:

$$HDI = \sqrt[3]{E.H.I}$$

(where E, H and I are education, income and health respectively)

Therefore, the above formulation implies that:

$$MHDI2 = \sqrt[4]{E.H.I.WGI}$$

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[29] http://hdr.undp.org/en/data, August 2014

Hence, MHDI2 is the geometric mean of the traditional HDI components along with WGI, giving them all the same weight. Ranking of selected countries are provided in annexes.

Since this article would like to place emphasis on political instability and armed conflict, the third MHDI, called MHDI3 is calculated as the geometric mean of HDI with only one of the governance indicators, PSNV only:

$$MHDI3 = HDI^{3/4}.PSNV^{1/4} = \sqrt[4]{E.H.I.PSNV}$$

The fourth indicator, MHDI 4, incorporates the HDI with all values of governance except PSNV. Therefore:

$$MHDI4 = HDI^{3/4}.MWGI^{1/4}$$

MWGI stands for Modified World Governance Index and is the geometric mean of all governance indicators except PSNV:

$$MWGI = \sqrt[5]{VA.GE.RQ.RL.CC}$$

Rankings according to each index were then calculated, taking the sample of 171 countries; the country with the highest human development or modified human development index value ranked first of 171, while the country with the lowest value ranked 171st. Details of index values and ranking can be found in the annexes.

Before presenting index calculations and rankings, the results of correlation analysis are reported. For instance, over the considered period, the components of the governance index, namely Voice and Accountability, Political Stability and No Violence, Regulatory Quality, Rule of Law, Government Effectiveness and Control of Corruption seem to be highly, positively and significantly correlated with each other for all considered years (annex 2). It is to be noted, however, that Political Stability and no violence has the lowest correlation with the other components relative to the other bivariate correlations and this is valid through all considered years.

The correlation between WGI and GDP per capita (in 2005 constant Dollars, data from the World Development Indicators Database) also seems to be strong and positive for all the considered years. When looking at the correlation between each governance indicator and GDP per capita (taken in logarithmic form), even though all coefficients are highly significant, the correlation between GDP per capita and VA and PSNV is not very strong, in all cases, it is lower than the correlation between GDP per capita and RG, RQ, RL and CC (annex 3).

As for the correlation between governance indicators and the traditional HDI, it is strong and positive and exhibits the same patters as the correlation between GDP per capita and governance components and governance as a whole (annex 4)

Taking the change in HDI rank between 2005 and 2012, it was found that fourteen countries witnessed a gain or loss of more than ten positions. They are presented in the table below.

Countries which have lost more than 10 HDI positions		Countries which have gained more than 10 HDI positions	
Solomon Islands	-11	Botswana	11
Tonga	-13	Belarus	13
Seychelles	-15	China	13
		Hong Kong Sar, China	14
		Saudi Arabia	14
		Azerbaijan	15
		Singapore	17
		Turkey	18
		Iran, Islamic Rep.	20
		Rwanda	21

Table 7.2. Significant Gains and Losses in HDI Positions (With Number of Positions Lost or Gained)

Source: HDR 2014 (see footnote 2), author's calculations

Concerning MHDI1, the interesting feature is that the inclusion of governance in the value of the Human Development Index causes for some countries a negative percentage variation whereas with the HDI, the lowest variation over the period for the considered group of countries was 0%. This feature (the negative growth of MHDI) is also present in the three other MHDI indicators. Concerning the change in ranking for the considered period, the countries showing gains and losses greater than ten positions are presented in the below table.

Countries Which Have Lost More Than 10 MHDI1 Positions		Countries Which Have Gained More Than 10 MHDI1 Positions	
Iceland	-11	Angola	11
Venezuela, Rb	-11	Bangladesh	11
Thailand	-13	Colombia	11
Egypt, Arab Rep.	-14	Lao Pdr	11
Greece	-14	Liberia	11
Algeria	-16	Serbia	11
Maldives	-16	Uzbekistan	11
Mauritania	-16	Tonga	12
Madagascar	-18	Cape Verde	13
Yemen, Rep.	-18	Belarus	15
Lebanon	-20	Iraq	15
Pakistan	-22	Zambia	18
Libya	-23	Indonesia	19
Mali	-23	Georgia	24
Fiji	-25	Rwanda	35
Syrian Arab Republic	-45		

Table 7.3. Significant Gains and Losses in MHDI1 Positions (With Number of Positions Lost or Gained)

Source: Author's Calculations Based on WGI (See Footnote 1) and HDR 2014 (See Footnote 2)

Moving to MHDI2, the results in terms of gain and loss between 2005 and 2012 are presented below.

Countries Which Have Lost More Than 10 MHDI2 Positions		Countries Which Have Gained More Than 10 MHDI2 Positions	
Yemen, Rep.	-11	Bangladesh	11
Algeria	-12	Zambia	11
Greece	-12	Angola	12
Pakistan	-15	Indonesia	12
Fiji	-17	Peru	12
Lebanon	-17	Cape Verde	13
Libya	-17	Belarus	17
Madagascar	-18	Botswana	18
Syrian Arab Republic	-19	Georgia	19
		Rwanda	26

Table 7.4. Significant Gains and Losses in MHDI2 Positions (With Number of Positions Lost or Gained)

Source: Author's Calculations Based on WGI (See Footnote 1) and HDR 2014 (See Footnote 2)

Concerning MHDI3 and MHDI4, the winners and losers are presented in tables 7.5 and 7.6.

Countries Which Have Lost More Than 10 MHDI3 Positions		Countries Which Have Gained More Than 10 MHDI3 Positions	
Jordan	-11	Colombia	11
São Tomé And Principe	-11	Liberia	11
Turkey	-11	Namibia	11
Madagascar	-14	Nepal	11
Egypt, Arab Rep.	-18	Brazil	12
Mauritania	-18	Serbia	12
Greece	-20	United States	12
Maldives	-20	Angola	13
Mali	-20	Russian Federation	13
Palestine	-20	Singapore	14
Yemen, Rep.	-21	Côte D'ivoire	16
Tunisia	-22	Poland	16
Lebanon	-25	Sri Lanka	16
Pakistan	-27	Zambia	16
Bahrain	-30	Botswana	17
Libya	-51	Indonesia	19
Syrian Arab Republic	-70	Timor-Leste	21
		Azerbaijan	22
		Iraq	22
		Rwanda	26
		Uzbekistan	34

Table 7.5. Significant Gains and Losses in MHDI3 Positions (With Number of Positions Lost or Gained)

Source: Author's Calculations Based on WGI (See Footnote 1) and HDR 2014 (See Footnote 2)

Countries Which Have Lost More Than 10 MHDI4 Positions		Countries Which Have Gained More Than 10 MHDI4 Positions	
Greece	-12	China	12
Samoa	-13	Zambia	12
Venezuela, Rb	-14	Belarus	15
Madagascar	-16	Cape Verde	16
Fiji	-19	Georgia	17
		Botswana	18
		Rwanda	22

Table 7.6. Significant Gains and Losses in MHDI4 Positions (With Number of Positions Lost or Gained)

Source: Author's Calculations Based on WGI (See Footnote 1) and HDR 2014

If MHDI3 is adopted, thirty-eight countries in total would have gained or lost more than ten ranks. Using MHDI4, twelve countries would have gained or lost more than ten ranks. Results are summarized in table 7.7.

Index	Number of Countries That Gained or Lost More Than 10 Ranks
HDI	13
MHDI1	31
MHDI2	19
MHDI3	38
MHDI4	12

Table 7.7. Number of Countries Having Gained or Lost More than 10 Ranks By Index

Source: Author's Calculations Based on WGI (See Footnote 1) and HDR 2014 (See Footnote 2)

It is clear that the inclusion of the governance index with the PSNV component in it causes higher variability in rankings across time when the adopted index is MHDI1 and MHDI2 relative to HDI. However, MHDI4, which does not include the PSNV indicator does not differ much from HDI in terms of evolution.

Another way of viewing things is to calculate the magnitude of the difference between HDI variation in rank over the considered period and the variation in rank of each of the considered MHDIs over the same period. For instance, if country A has gained (between 2005 and 2012) two positions in terms of HDI but has lost three positions in terms of MHDI1, then the magnitude is equal to five in absolute value. This calculation allows seeing to what extent these variations in indicators go hand in hand with the variations in HDI. For example, Libya has the same ranking in terms of HDI in 2005 and 2012, however, it has lost twenty-three positions in terms of MHDI1. So the gap is large relative to a country like Cuba which has witnessed also no change in HDI rank but has gained seven positions in terms of MHDI1. Four gaps were therefore calculated in absolute value to show this magnitude. A cut-off of ten was adopted (as a rule of thumb, and inspired by Gamlath (2013)). A negative magnitude means a loss relative to HDI whereas a positive magnitude implies a gain. The below table reports the countries for which the magnitude was found to be greater than ten in absolute value.

MHDI1 – HDI		MHDI2 - HDI	
Cameroon	-11	Serbia	11
China	-11	Turkey	-11
Côte D'ivoire	11	Yemen, Rep.	-11
Moldova	11	Cape Verde	12
Togo	11	Pakistan	-12
Uzbekistan	11	Thailand	-13
Zambia	11	Madagascar	-14
Azerbaijan	-12	Venezuela, Rb	-14
Cape Verde	12	Fiji	-15
Egypt, Arab Rep.	-12	Lebanon	-15
Paraguay	12	Tonga	16
Haiti	13	Libya	-17
Hong Kong		Algeria	-18
Sar, China	-13	Iran, Islamic	
Mauritania	-13	Rep.	-19
Albania	14	Georgia	20
Madagascar	-14		
Rwanda	14		
Saudi Arabia	-14		
Turkey	-15		
Maldives	-16		
Seychelles	16		
Indonesia	17		
Iraq	17		
Lebanon	-18		
Thailand	-18		
Venezuela, Rb	-18		
Yemen, Rep.	-18		
Pakistan	-19		
Serbia	21		
Algeria	-22		
Fiji	-23		
Libya	-23		
Mali	-23		
Georgia	25		
Tonga	25		
Iran, Islamic Rep.	-26		
Syrian Arab			
Republic	-36		
37 countries, 16 with positive magnitudes and 21 with negative magnitudes		15 countries, 4 with positive magnitudes and 11 with negative magnitudes	

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MHDI3 - HDI		MHDI4 - HDI	
Algeria	-11	Madagascar	-12
Congo, Rep.	11	Algeria	-15
Djibouti	11	Cape Verde	15
Timor-Leste	11	Serbia	16
Ukraine	11	Tonga	16
Poland	13	Fiji	-17
United States	13	Georgia	18
Russian Federation	14	Iran, Islamic Rep.	-18
Sri Lanka	14	Venezuela, Rb	-21
Albania	15		
Greece	-15		
Hong Kong Sar, China	-15		
Mauritania	-15		
Thailand	-15		
Togo	15		
Egypt, Arab Rep.	-16		
Côte D'ivoire	17		
Haiti	17		
Indonesia	17		
Jamaica	17		
Tonga	17		
Palestine	-19		
Maldives	-20		
Mali	-20		
Bahrain	-21		
Yemen, Rep.	-21		
Serbia	22		
Lebanon	-23		
Tunisia	-23		
Iraq	24		
Pakistan	-24		
Iran, Islamic Rep.	-27		
Turkey	-29		
Uzbekistan	34		
Libya	-51		
Syrian Arab Republic	-61		
36 countries, 18 with positive magnitudes and 18 with negative magnitudes		9 countries, 4 with positive magnitudes and 5 with negative magnitudes	

Table 7.8. Relative Magnitude of Change In Rank Vis-À-Vis HDI for Each MHDI Index

Source: Author's Calculations Based on WGI (See Footnote 1) and HDR 2014 (See Footnote 2)

Overall the inclusion of governance seems to cause great discrepancies relative to HDI only in the case where the considered governance dimension includes political stability and no violence in its construction and therefore this specific dimension of governance seems to play an important role in the change in rankings.

As mentioned previously, MHDI2 represents the most conservative estimate since it gives an equal value to governance and to other indicators of the traditional HDI. If one wishes to emphasize the political stability per se, then MHDI4 might seem more appropriate; however, it does not take into account the fact that political instability might have an impact on other governance indicators and therefore an impact on the capabilities of countries as well as their vulnerability.

Focusing on MHDI2, the difference in ranking between HDI and MHDI2 was computed for all countries and all available years. Countries with ranking difference between HDI and MHDI2 of more than ten positions (plus ten or minus ten) were highlighted. They are shown in the below table:

2005	2008	2010	2011	2012
Azerbaijan	Afghanistan	Algeria	Algeria	Algeria
Belarus	Azerbaijan	Argentina	Azerbaijan	Azerbaijan
Botswana	Belarus	Azerbaijan	Barbados	Barbados
Cape Verde	Botswana	Barbados	Belarus	Belarus
Chile	Cape Verde	Belarus	Benin	Benin
Costa Rica	Costa Rica	Belize	Botswana	Botswana
Cuba	Cuba	Benin	Brazil	Brazil
Dominica	Dominica	Botswana	Cape Verde	Cape Verde
Equatorial Guinea	Ecuador	Cape Verde	Chile	Costa Rica
Iran, Islamic Rep.	El Salvador	Chile	Costa Rica	Cuba
Iraq	Iran, Islamic Rep.	Costa Rica	Cuba	Dominica
		Cuba	Dominica	Equatorial

Israel	Iraq	Dominica	Equatorial Guinea	Guinea
Kazakhstan	Israel	Ecuador	Finland	Finland
Lesotho	Jamaica	Fiji	Iran, Islamic Rep.	Georgia
Libya	Lebanon	Finland	Iraq	Iran, Isl. Rep.
Madagascar	Libya	Iran, Islamic Rep.	Jamaica	Iraq
Mauritius	Mauritius	Iraq	Kazakhstan	Jamaica
Mongolia	Myanmar	Jamaica	Lebanon	Kazakhstan
Myanmar	Namibia	Lebanon	Lesotho	Lebanon
Namibia	Oman	Lesotho	Libya	Lesotho
Paraguay	Russian Federation	Libya	Mauritius	Libya
Russian Federation	Samoa	Mauritius	Myanmar	Mauritius
Samoa	South Africa	Myanmar	Namibia	Myanmar
Saudi Arabia	Sudan	Namibia	Pakistan	Namibia
Senegal	Suriname	Nigeria	Russian Federation	Pakistan
South Africa	Turkey	Pakistan	Rwanda	Russian Federation
Syrian Arab Republic	United States	Russian Federation	Samoa	Samoa
Thailand	Uzbekistan	Samoa	Saudi Arabia	Saudi Arabia
Turkey	Venezuela, Rb	Saudi Arabia	South Africa	Senegal
United States	Palestine	South Africa	Sudan	South Africa
Uzbekistan		Sudan	Syrian Arab Republic	Suriname
Venezuela, Rb		Tonga	Tonga	Syrian Arab Rep.
Palestine		Uzbekistan	Uzbekistan	Tonga
		Venezuela, Rb	Venezuela, Rb	Uzbekistan
		Yemen, Rep.	Palestine	Venezuela, Rb
			Yemen, Rep.	Palestine
				Yemen, Rep.

Table 7.9.List of Countries that Have Lost or Gained more than 10 MHDI2 positions between 2005 and 2012.

The countries presented in the above table were then classified according to the frequency of persistence in the classification. For instance 18 countries were found in all 5 years. They are presented in the below table along with the difference between

HDI and MHDI2 for each year. First, the gap in ranking between HDI and MHDI2 in absolute value is on average 20 positions. In addition, in the considered sample, 10 countries exhibit permanent loss in ranking of HDI relative to MHDI2, whereas 8 countries exhibit a permanent gain for the considered period.

Group 1						
Country	2005	2008	2010	2011	2012	HDI classification[30]
Azerbaijan	-11	-16	-19	-17	-21	H
Belarus	-31	-25	-31	-35	-27	H
Botswana	24	31	29	31	31	M
Cape Verde	11	21	19	24	23	M
Costa Rica	15	13	15	13	16	H
Cuba	-20	-24	-24	-21	-19	VH
Dominica	21	21	24	24	25	H
Iran, Islamic Rep.	-12	-25	-31	-29	-31	H
Iraq	-21	-18	-15	-13	-14	M
Libya	-33	-23	-36	-43	-50	H
Mauritius	17	18	15	14	12	H
Myanmar	-18	-19	-20	-18	-14	L
Namibia	13	20	17	18	18	M
Russian Federation	-18	-17	-16	-18	-21	H
Samoa	26	26	26	24	25	M
South Africa	21	16	17	18	18	M
Uzbekistan	-15	-12	-13	-14	-13	M
Venezuela, Rb	-26	-36	-40	-40	-40	H

Table 7.10. Group 1 Countries

Source: Author's Calculations Based on WGI (See Footnote 1) and HDR 2014

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[30] VH = Very High Human Development, H = High Human Development, M = Medium Human Development, L = Low Human Development, HDR classification adopted

The countries presented in the above table were then classified according to the frequency of persistence in the classification. For instance eighteen countries were found in all five years. They are named Group 1 countries and presented in the below table along with the difference between HDI and MHDI2 rankings for each year. First thing to notice is that the gap in ranking between HDI and MHDI2 in absolute value is on average equal to twenty positions. In addition, in the considered sample, ten countries exhibit permanent loss in ranking of HDI relative to MHDI2, whereas eight countries exhibit a permanent gain for the considered period.

Overall, for the group of countries, the values of the gaps do not show great variability from year to year which seems to suggest that these countries have structurally worse or better performance in terms of governance. Given that the data is considered between 2005 and 2012, the conclusion for this group is that they might have been subject to a "governance shock" prior to the study period, with everlasting effects.

The second group that has been identified as having a gap between HDI and MHDI2 greater than ten for three or four of the considered years. The characteristic of this group is that the average gap is close to twelve, which is lower than for the first group. This makes sense because since ten was chosen as the cut-off, these countries could easily fall out of the selection sample. Taking a closer look, one might focus on the year of entrance of Group 2 countries, I find some interesting features. First there are those that enter the group, leave and re-enter. These are: Chile, Equatorial Guinea, Kazakhstan, Lesotho, Saudi Arabia, Syria and Palestine. For most cases, these countries are closer to Group 1 since they exhibit a semi-structural pattern when it comes to the gap between MHDI2 and HDI.

Group 2						
Country	2005	2008	2010	2011	2012	HDI Classification
Algeria	0	-9	-12	-16	-18	H
Barbados	8	9	13	13	15	H
Benin	10	10	11	12	11	L
Chile	12	10	13	11	9	VH
Equatorial Guinea	-12	-9	-10	-11	-11	M
Finland	7	5	14	13	13	VH
Jamaica	9	13	15	17	15	H
Kazakhstan	-15	-10	-7	-13	-13	H
Lebanon	-7	-24	-14	-16	-22	H
Lesotho	12	10	14	14	15	L
Pakistan	-2	-9	-12	-18	-14	L
Saudi Arabia	-12	-10	-13	-21	-20	VH
Sudan	-8	-11	-14	-12	-10	L
Syrian Arab Republic	-14	-10	-10	-15	-24	M
Tonga	0	5	15	14	16	L
Palestine	-14	-16	-7	-11	-12	M
Yemen, Rep.	-3	-8	-11	-14	-14	L

Table 7.11. Group 2 Countries

Source: Author's Calculations Based on WGI (See Footnote 1) and HDR 2014

The second category consists of countries that enter in a given year and sustain the gap. These are: Algeria, Barbados, Finland, Lebanon and Yemen. If I focus on the three countries with negative gaps, namely, Algeria, Lebanon and Yemen, recent history shows that these countries have experience political turmoil and unrest. For instance Lebanon has experienced armed conflict in 2006 - Israel war- and 2007 - Nahr el Bared events - (UNDP 2009) and Yemen has also witnessed unrest due to what was related to the Arab spring. The PRIO (Peace Research

Institute Oslo) database shows records of the Israel War on Lebanon for 2006, however, the database stops at 2008[31]. Concerning where those three countries stand in terms of HDI classification (very high human development (VH), high human development (H), medium human development (M) and Low Human Development (L), there is no clear prevalence for one or the other HDI classification that could be linked to the evolution of the gap between HDI and MHDI2. Current media records show that Algeria and Yemen were also subject to political instability.

The remaining countries of the list show up twice or once, therefore one cannot make conclusions in that respect. Taking a closer look at the countries with negative HDI − MHDI2 gaps in both groups, they are: Azerbaijan, Belarus, Libya, Myanmar, Russia, Uzbekistan, Venezuela, Algeria, Lebanon, Yemen. The interesting feature of this group is the existence of four countries belonging to the MENA (Middle East and North Africa) Region. Taking a closer look at the evolution of HDI and MHDI2 for those countries, I find that, between 2005 and 2012, Algeria has witnessed an improvement in HDI rank versus minor deterioration in the situation of Lebanon, and none for Libya and Yemen.

Country/ HDI Rank	2005	2008	2010	2011	2012
Algeria	90	89	85	84	84
Lebanon	58	61	62	58	60
Libya	48	48	48	63	48
Yemen, Rep.	139	142	140	137	139

Table 7.12. HDI Evolution for Algeria, Lebanon, Yemen and Libya

Source: Author's Calculations Based on WGI (See Footnote 1) and HDR 2014

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[31] www.prio.org/Data/Armed-Conflict/UCDP-PRIO/Armed-Conflicts-Version-X-2009/ retrieved August, 2014

When MHDI2 is considered, over the considered period, all four countries lose (twelve positions for Libya, seventeen for Lebanon, seventeen for Libya and eleven for Yemen. As for the difference in ranking between HDI and MHDI2, it reaches up to fifty positions in 2012 for Libya.

Country/Rank MHDI2	2005	2008	2010	2011	2012
Algeria	90	98	97	100	102
Lebanon	65	85	76	74	82
Libya	81	71	84	106	98
Yemen, Rep.	142	150	151	151	153

Table 7.13. MHDI2 Evolution for Algeria, Lebanon, Yemen and Libya

Source: Author's Calculations Based on WGI (See Footnote 1) and HDR 2014 (See Footnote 2)

Overall, the relationship between MHDI 2 and HDI is near linear by construction, actually it's a tautology to say that HDI is strongly correlated to MHDI2 since it represents approximately three quarter of MHDI2. The below scatter represents the relationship between the two indexes for year 2012.
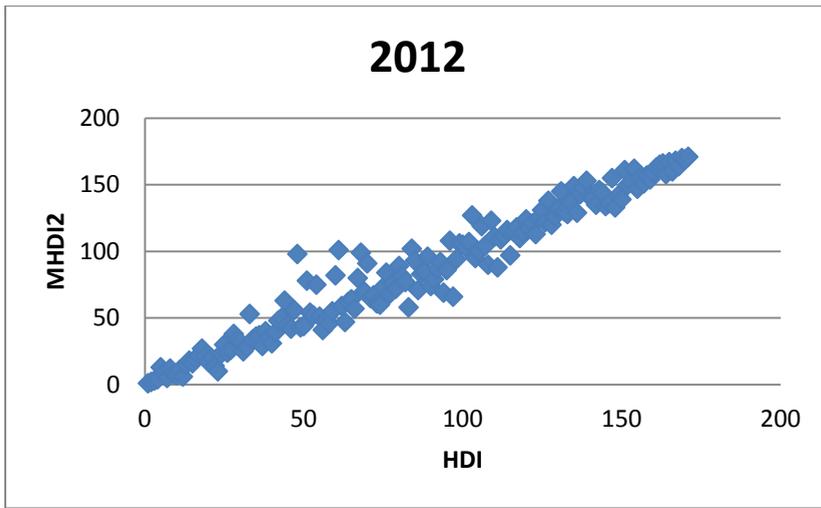
Figure 1. HDI and MHDI2 Values Scatter

Source: Author's Calculations Based on WGI (See Footnote 1) and HDR 2014

Another way of viewing this relationship is by taking a look at the relationship between HDI and the absolute value of the difference between HDI and MHDI2. The below scatter is obtained:
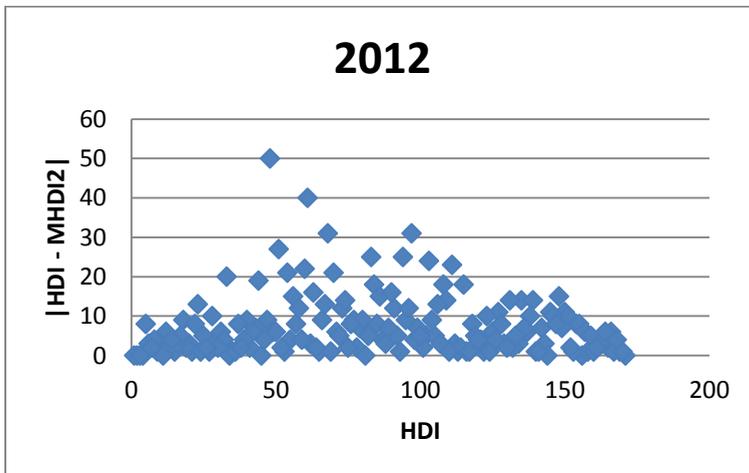

Figure 2. HDI and HDI - MHDI2 Values Scatter

Source: Author's Calculations Based on WGI (See Footnote 1) and HDR 2014

The interesting feature is that the gap between HDI and MHDI2 becomes larger for HDI ranks between 50 and 100, therefore in the midrange of the classification. This is explained by the fact that the change in rank between MHDI2 and HDI is most significant for countries falling in the high to medium level of human development.

The authors also attempted to check whether the adoption of MHDI2 caused major changes in the classification of countries as they are in the HDI, namely as very high, high, medium and low human development. Taking the sample of 171 countries, they were divided into four groups: three groups of forty-three countries ranked as very high, high and medium human development and a group of forty-two countries for the bottom low human development. The classification was performed based on the ascending HDI and MHDI2. Then the change in the classification was checked for year 2012. It was found that, overall, forty out of the 43 forty-three countries that ranked very high in HDI also ranked very high in MHDI2. On the lower end of the spectrum, 40 out of the 42 low development countries according to HDI still ranked as low development in MHDI2. Results were found to be less conclusive for both the high and medium level of development countries. For high levels of development, only thirty-three countries out of forty-three kept the same level of classification and for medium development countries, and thirty-four out of forty-four kept the same level of development (annex 13). This finding seems to show that on a global level, one might consider that HDI and any modified version of HDI are redundant, since the majority of countries keep their classification. However, this result has to be nuanced by the fact that the inclusion of the governance makes a difference for some countries first within the high development group (for instance the United States lost eight positions from one measure to the other but stayed in the same group), and also, more markedly

in the other groups. For instance Lebanon stayed in the high development group but lost twenty-two positions. Since the size of a single group is around forty countries, it all depends on the initial position of this country in terms of HDI as well as the magnitude of the change implied by the inclusion of the governance indicator.

4. CONCLUSION

As mentioned previously, the correlation between the ranks of HDI and MHDI2 is very high. One might therefore be tempted to consider that both measures are redundant. However, even though it seems logical that a better HDI rank means that the country performs better in terms of capabilities, the fulfilment of those capabilities requires a suitable institutional framework. When this institutional and political framework is accounted for by governance index, some countries exhibit changes in ranks and in categories of human development. Within a given year, this change might not appear to be significant or to significantly alter the category of development; however, taken in a dynamic perspective, a shock in terms of governance could have long-lasting effects and the accumulation of those effects might lead, if the country does not have enough resilience, to a loss in capabilities. Taking the example of Lebanon, between 2005 and 2012, it has only lost two ranks in terms of HDI but seventeen ranks in terms of MHDI2. Between those two years, Lebanon has witnessed changes in political events (2006, 2007 and 2008, UNDP, 2009) that might have caused a net loss in terms of political stability. If a large definition of human development is adopted, then, the capabilities of the country were seriously affected; this however does really not show up in HDI. In the introduction of the present article, it was also mentioned that very often, vulnerability and resilience are two sides of the same coin.

Applying this to Lebanon, I can propose the following paradigm: HDI variations in terms of value and ranking and development categories can be considered as an indicator of resilience since it is generally acknowledged that the level of development as measured by the HDI takes more time to change than the seven-year period that was considered. However, the evolution of MHDI2 which has greater variability can be taken as a measure of vulnerability. More time periods of observation of both indicators are needed for a given country, but it might be interesting to investigate how long the HDI and MHDI2 ranks take in time after a shock has occurred to go back into ranks that are approximately close as is the case for instance for the very high development countries.

On another front, adopting MHDI2 can better inform policy makers about the urgency of reinforcing governance and designing institutions that allow their countries to better absorb the shocks. The reduced changes from year to year in HDI might give a false sense of security, whereas MHDI2, which is more volatile and more sensitive to negative shocks, might urge policy-makers to take action to protect national economies. Indexes such as the HDI and the EVI are informative in nature and they allow to summarize a given dimension into one measure. Debate has been ongoing about their use and their validity relative to one-dimensional indicators such as GDP per capita (Klugman, Rodriguez and Choi, 2010). Even if it remains globally true that changes in HDI over the 2005 – 2012 period have been accompanied by changes in MHDI2 in the same direction, the average magnitude of the difference taken in absolute value is higher for MHDI2 relative to HDI is higher (4.8 for MHDI2 versus 4.04 for HDI for year 2012; the t-test also showed that those two averages are significantly different); therefore suggesting that the MHDI2 is able to give more visibility to variations in levels of human development driven by governance.

In general, the literature on vulnerability and resilience addresses negative shocks; however, the MHDI2 results show that improvements in governance might also bring about positive and significant changes in ranking. Further avenues of research might be explored in the future if more data becomes available, notably through the construction of Vector Autoregressive Models with impulse response functions allowing to assess the impact of a governance shock on economic development.

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PART 2 – RESILIENCE

CHAPTER 8

RESILIENCE AT AN INDIVIDUAL LEVEL

Geographic Variation in Degrees of Empowerment[32]

Sahar T. Issa and Roula Al Daïa

Abstract: The current chapter is the first of two chapters together comprising Part 2 of our edited volume that is dedicated to empirically exploring different manifestations of resilience to environmental effects of armed conflict. Each chapter approaches resilience from a different organizational level. In this Chapter 8, degrees of individual empowerment in the coastal area of North Lebanon are researched. For this, we use the analytical framework by Alsop, et al. (2006), which regards empowerment in terms of two components: agency and opportunity structure. Agency and opportunity structure play a large role in terms of services delivery, labour and job opportunities, and participation in the community. We therefore focus on three sub-domains at the local level including public service delivery, labour and community development. Results show how individual empowerment in north Lebanon has been affected by the combination of agency and opportunity structure, with education being a particularly

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important determinant of empowerment, especially in the most deprived areas.

Keywords: Empowerment, agency, opportunity structure

1. INTRODUCTION

Empowerment is broadly regarded as '*increasing poor people's freedom of choice and action to shape their own lives*' (Narayan, 2005:4). Research on empowerment connects human wellbeing to the larger social and political environment by highlighting people's capabilities and discovering the influence of social issues, rather than focusing on risk factors and blaming the victims (Perkins and Zimmerman, 1995). Empowerment has a multidimensional, complex, and dynamic nature (Samman and Santos, 2009). It refers to both a process and an outcome. The processes and outcomes of empowerment differ in their apparent shape because there is no specific standard that can fully determine its meanings in different contexts or populations (Perkins and Zimmerman, 1995). Therefore, definitions of empowerment vary depending on the discipline, objectives of the research or intervention, and approaches used to assess it, and are generally associated with terms such as agency, autonomy, freedom, power, control, participation, integration, choice, and change (Goetz and Gupta, 1996; Brown, 2005; Lokshin and Ravallion, 2005; Malena and Heinrich, 2005; Moser, 2005; Ibrahim and Alkire, 2007).

This chapter identifies the different degrees of empowerment that individuals have in the coastal area of north Lebanon within the context of armed conflict. The coastal area of north Lebanon is of particular interest for three main reasons. First, this area has been exposed to various episodes of armed conflict. Second, this area is also considered to house the poorest

and most deprived families in Lebanon. Third, and as might be expected from the previous description, another characteristic is the government's neglect of this area.

We follow the analytical framework developed by Alsop et al. (2006) who define empowerment as "*a group's or individual's capacity to make effective choices, that is, to make choices and then to transform those choices into desired actions and outcomes*" (Alsop et al., 2006:10). The framework views empowerment in terms of two components: agency and opportunity structure; and distinguishes between degrees of empowerment. Alsop et al. analytical framework is outlined in the World Bank publication *Empowerment in Practice: From analysis to implementation*, which provides a set of indicators that can be universally applied and compared for measuring agency, opportunity structure, and degrees of empowerment. The findings are based on a combination of quantitative and qualitative methods, including an analysis of 500 questionnaire surveys distributed to citizens in the study area, and two focus group discussions with local authorities.

The chapter is structured as follows: we start by presenting a brief literature review on empowerment, agency, and opportunity structure. We then discuss the findings and draw conclusions in the final section.

2. EMPOWERMENT, AGENCY, AND OPPORTUNITY STRUCTURE

Empowerment is usually conceived in terms of two components: agency and opportunity structure. Agency refers to an actor's capacity to visualize options, express preferences, and make purposeful choices (Alsop and Heinsohn, 2005; Ibrahim and Alkire, 2007). According to Sen (1999), agency is what an individual is free to do and accomplish in the quest for purposes or values that this individual perceives as important.

Consequently, "*having greater freedom to do the things one has reason to value is (1) significant in itself for the person's overall freedom, and (2) important in fostering the person's opportunity to have valuable outcomes*" (Sen, 1999:18). However, considering agency as synonymous with empowerment is problematic (Drydyk, 2008). It is important to understand that the ability to perform as an agent is not equivalent to the achievement of desired outcomes (Petesch et al., 2005). Even when people have the ability to visualize options and make choices, they may not be capable of using their agency efficiently and may be inhibited by their opportunity structure. Here, the opportunity structure refers to the institutional environment that comprises the formal and informal contexts within which the actors function (Alsop and Heinsohn, 2005; Ibrahim and Alkire, 2007). Petesch et al. (2005) argue that one's opportunity structure is influenced by three major factors: the accountability of institutions, the performance of groups in power, and the implementation capacity of the state. These three factors set the contexts and opportunities that shape individuals' and groups' capacities to participate, influence, and hold institutions liable (Petesch et al., 2005). As such, agency and opportunity structure have a mutual relationship that leads to differing degrees of empowerment. The relationship between agency and opportunity structure is highlighted by social theorists such as Giddens (1984) who emphasize the importance of considering structures and agency as 'dual', in that they are both the medium and the results of actions that form social systems (Giddens, 1984).

The degree of empowerment can be measured in terms of existence, usage, and actual accomplishment of choices by determining whether an individual has an opportunity to make a choice, whether they can truly take advantage of the opportunity to choose, and whether the decision leads to a preferred outcome once the choice is made (Alsop and Heinsohn, 2005; Alsop et al.,

2006). Various factors including the socioeconomic and geographic status of a person or group can influence the existence of choice, which may not always exist. The use of choice relies on the actual benefit accruing to an individual or a group arising from an opportunity to choose. The achievement of a choice depends on the extent to which the desired result has been accomplished.

An individual's empowerment can be studied in different domains. Generally, three main domains are perceived, each divided into further sub-domains, which indicate in what areas and parts of their lives that individuals are empowered. The 'State' domain, in which an individual is considered as a civic actor, is divided into three sub-domains: politics, justice, and public service delivery. The 'Market' domain, in which an individual is considered an economic actor, is divided into labour, goods, and private services sub-domains. The 'Society' domain, in which an individual is considered a social actor, is divided into two sub-domains covering family and community. Even though prior assumptions should not be made about empowerment relationships between different domains or sub domains, the degree of empowerment in one domain can be associated with similar degrees of empowerment in a different domain or sub-domain (Alsop and Heinsohn, 2005; Alsop et al., 2006).

According to Alsop et al. (2006), empowerment within domains and sub-domains can be experienced at various levels (or administrative boundaries): macro-, intermediary, and local. The macro-level may be the national level or that of the state. The intermediary level may correspond to the district, and the local level to the village or city. It is important to note that the degree of empowerment at one level is not necessarily the same as that on another level.

When measuring empowerment, the data collected do not necessarily have to cover all the domains and levels of the analytical framework. The number of domains, sub-domains, and

levels considered mainly depends on the nature and purpose of the research. Usually, two to six domains and one to three levels are included in a study (Alsop and Heinsohn, 2005). In this chapter, the degrees of empowerment in the public services delivery sub-domain within the state domain, the labour sub-domain within the market domain, and the community sub-domain within the society domain are all addressed at the local level.
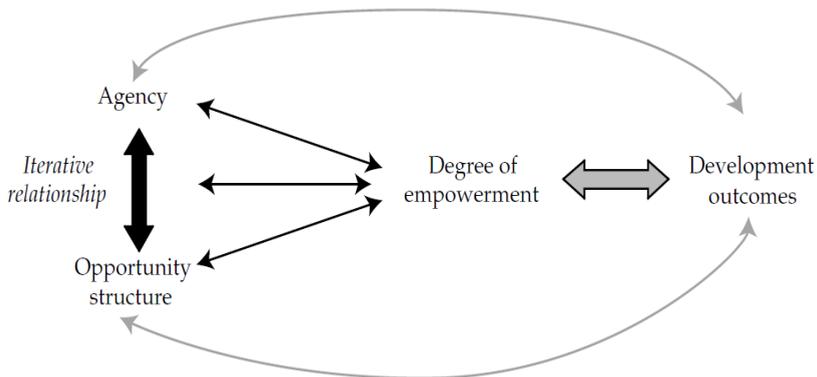
Figure 8.1: The Relationship between Outcomes and Correlates of Empowerment (Source: Alsop et al., 2006, p.10)

3. STUDY AREA

The study area encompasses the coastal region of north Lebanon. The northern coastline covers 100 km, roughly 40% of the entire Lebanese coast (Mitri et al., 2012a). The area incorporates 24 cities and villages grouped into five areas: Akkar, Menieh, Tripoli, Koura, and Batroun. The coastal area of north Lebanon is predominantly agricultural, although its southern part is more urbanized with a number of major cities such as Tripoli and Batroun (Institute of the Environment, 2007). North Lebanon is home to about one-fifth of the total population of Lebanon, with

approximately 764,000 inhabitants (Central Administration of Statistics, 2007).

The coastal area of north Lebanon has been involved in several episodes of armed conflict, resulting in severe impacts on the social, economic, and political levels as well as on the environment (Mitri et al., 2012b). The north of Lebanon is considered to be the poorest and most deprived area of the country, with 46% of the nation's extremely poor population and 38 %of the poor population (Das and Davidson, 2011). This region has historically been neglected by the Lebanese government, which concentrates its efforts mainly in Beirut and its suburbs (Volk, 2009).

4. RESULTS AND DISCUSSION: DEGREES OF EMPOWERMENT IN THE COASTAL AREA OF NORTH LEBANON
4.1. State Domain: Public Service Delivery

In terms of the public services delivery sub domain of the state domain, the citizens from the coastal area of north Lebanon complained about the poor quality of public services. Although the survey shows that houses in the coastal area of north Lebanon are connected to the electricity grid, major instabilities and power supply disruptions are common. The number of hours per day when electricity is available differs from one city or village to another. In several villages of Akkar, it was reported that electricity is only available for two to three hours a day. The significant failures in the electricity supply put an extra burden on the population by forcing them to search for alternatives such as subscribing for electricity from private providers or buying private batteries or generators, with the associated additional costs of fuel. Further, and particularly in Akkar, not everyone can afford private generators or to subscribe for electricity. The results indicate that large percentages of the populations in Menieh, Tripoli, Koura,

and Batroun are able to afford the extra costs of private sources of electricity: 76% of the coastal population in Menieh, 82% in Tripoli, 91% in Koura, and 95% of the coastal population in Batroun. In comparison, only 51% of the coastal population in Akkar are able to afford public and private sources of electricity, with the other 49% relying on public sources. It is notable however, that residents in several villages in Akkar reported that they had recently been connected to the electricity grid.

Results also showed that many citizens in the coastal area of north Lebanon do not use the public water system. Batroun area had the highest percentage of people using the public piped water system at 52%, whereas only 17% of the citizens in Akkar use the public system. This is due to various reasons such as the quality of water and access to public water sources. For example, 37% of citizens in Akkar, 17% in Menieh, 49% in Tripoli, 41% in Koura, 35% of citizens in Batroun reported that they buy bottled water from private companies because they do not trust the quality of water provided by the public system. In Akkar and Menieh, around 45% of the population rely on either private or public wells for their water because they cannot afford other alternatives; whereas in Koura, citizens reported that the water was polluted and they preferred other alternatives such as bottled water. People living in the El Mhamra village in Akkar reported that they had only recently been able to access public water. However, during field visits, they reported receiving warnings from the municipality council six months later that the water was polluted and it was better not to use it. Several villages, notably Arida and Cheikh Zennad in Akkar, still do not have access to the public water system. In addition to issues with the services mentioned above, citizens and local authorities complained about other public services such as public schools, hospitals, and wastewater and solid waste management. This was particularly the case in areas of Akkar where there are no local hospitals, wastewater

networks are mixed with irrigation canals, and public schools are not available for all educational levels.

70% of the coastal population in Akkar lack any kind of health insurance compared with 42% in Menieh and Batroun, 39% in Tripoli, and 31% in Koura. Only 20% of citizens in Akkar benefit from the National Social Security Fund, whereas 1% benefit from private insurance, and 9% from other type of health insurance. For Menieh, 49% of citizens benefit from the National Social Security Fund, 4% from private insurance, and 5% from other type of health insurance. In Tripoli, 52% of citizens benefit from the National Social Security Fund and 9% from private insurance. Koura has the highest percentage of people who are able to afford private insurances, with 46% of citizens benefiting from the National Social Security Fund, 19% from private insurance, and 4% from other type of health insurance. For Batroun, 47% of residents are able to benefit from the National Social Security Fund, 9% from private insurance, and 2% from other type of health insurance.

Despite the perceived low quality of public services delivery, around 90% of citizens in the five coastal areas have never complained to the authorities regarding the delivery of public services, even though they do have this option. In Akkar, 89% of the people had not complained to the authorities regarding public services delivery, Menieh 91%, Tripoli 84%, Koura 92%, and Batroun 98%. According to the citizens, they chose not to complain because even if they did they expected to be neglected and their voices to go unheard. This is confirmed in the survey, where the majority of citizens in the five areas who had complained about public services delivery revealed that their complaint had not been resolved.

The results show that individuals do have the opportunity to complain but the majority do not take advantage of this opportunity. For the minority who do use this opportunity to

complain about public services delivery, the preferred outcomes are not achieved. To better understand the results, we sought out the reasons and perceptions behind individuals' choices. Citizens were asked their perceptions regarding authorities' equitability in addressing needs and concerns and about the influence of political and religious characteristics on the authorities' treatment of people.

Perception	Area					
	Akkar	Batroun	Koura	Menieh	Tripoli	Total
Do you think that the authorities are more or less effective when addressing other people's needs/ concerns compared to yours?						
Much more effective	35%	24%	28%	20%	19%	25.2%
Slightly more effective	5%	13%	2%	14%	8%	8.4%
Neither more nor less effective						
Slightly less effective	59%	56%	61%	56%	67%	59.8%
Much less effective						
	1%	3%	4%	4%	3%	3.0%
	0%	4%	5%	6%	3%	3.6%
Do you feel the way in which the authorities treat people is affected by people's religion or political affiliation?						
Yes, very much						
Yes, slightly						
No, not at all						
Would rather not say	69%	79%	75%	57%	69%	69.8%
	5%	5%	6%	10%	15%	8.2%
	25%	13%	13%	14%	12%	15.4%
	1%	3%	6%	19%	4%	6.6%

Table 8.1: Authorities' equitability in addressing needs and concerns, and the influence of political and religious characteristics on the authorities' treatment of people

Around 60% of respondents in the five areas believed that the authorities were neither more nor less effective when addressing other's people needs or concerns than their own, whereas 35% of citizens in Akkar, 20% in Menieh, 19% in Tripoli, 28% in Koura, and 24% in Batroun and thought that the authorities were much more effective when addressing other people's needs or concerns. These people believed that it all depended on power or personal connections, particularly with local authorities and politicians. Similarly, when it came to the influence of political and religious characteristics on the authorities' treatment of people, 69% of citizens in Akkar, 57% in Menieh, 69% in Tripoli, 75% in Koura, and 79% of citizens in Batroun perceived that the way in which authorities treat people was very much affected by political affiliation and religion (Table 8.1).

4.1.1. Correlation analysis and Logistic regression analysis[33]
To further understand these results, the relationships between the various indicators were sought (using Spearman's rho correlations) for each of the five areas. The indicators included in the analysis were education level, complaining about public services delivery, equitability in addressing needs and concerns, and influence of religious and political affiliations on the authorities' treatment of people. The following significant relationships were found:

- A weak positive correlation between the perception of equitability in addressing needs and concerns, and the perception of the influence of social characteristics on the authorities' treatment of people in Akkar (Sig. = .327[**]) and in Menieh (Sig. = .258[**]). That is, those who think that authorities are more effective when addressing other's people needs or concerns than their own are more likely to

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[33] We thank Mrs. Rania Najjar for helping with the analysis through SPSS Software.

also perceive the way that authorities treat people to be affected by political affiliation and religion.

- A weak positive correlation between complaining about public services delivery and a perception that political and religious characteristics influence authorities' treatment of people in Tripoli (Sig =.223[*]). In other words, people who complain about public services delivery are more likely to also think that the way in which authorities treat people is affected by political affiliation and religion. One possible explanation is that Tripoli is a large city - the largest outside the capital Beirut - and the complex reality of Lebanon's society in terms of diverse religious and political affiliations is therefore more apparent to its residents.

In addition, logistic regressions were performed on data for each of the five areas to try to explain individual perceptions regarding the influence of religious and political affiliations on the authorities' treatment of people. The perception of authorities' effectiveness when addressing people's needs is an important factor and was therefore taken as the dependent variable (Table 8.2). The independent variables were age, gender, education level, income, organization membership, perception of involvement in community decision-making processes, and perception of authorities' equitability in addressing needs and concerns.

Independent Variable	Batroun	Koura	Tripoli	Menieh	Akkar
Age	0.001765	-0.036604	0.012491	**-0.075569***	0.041824
Gender	**-1.807316***	-0.714654	0.300579	0.658762	0.395893
Education	0.183793	-0.229410	0.204958	0.042293	-0.080191
Income	-0.026309	**0.447103***	0.016032	0.001264	-0.103495
Organization membership	0.744262	**-2.598135****	0.600897	1.530159	0.554039
Involvement	-0.104652	-0.435822	0.696319	-0.239450	**1.350588****
Effectiveness	0.063095	**1.695380***	0.135259	**0.665038***	**1.402461***
C	1.714031	-2.213624	-1.514911	0.984452	-6.037262
McFadden R-squared	0.127122	0.260365	0.052472	0.169340	0.239485

Probability: $*<0.05$, $**<0.1$

Table 8.2: Logistic regression to evaluate determinants of individual perceptions as to whether the way in which authorities treat people is affected by people's religion or political affiliation

In terms of significant determinants, the following results are worth noting: People in Akkar, Menieh, and Koura, who think that authorities are more effective in addressing other people's needs/concerns than their own are more likely to feel that the way in which authorities treat people is affected by people's religion or political affiliation. This might be due to the deprivation and poverty witnessed in these areas and the authorities neglect of people's conditions and their failure to cover basic needs in many cases. In addition, people in Akkar who are more involved in their community are more likely to feel that the way in which authorities treat people is affected by people's religion or political affiliation. One possible explanation might be that, with the deprivation and lack of opportunities in this area, being involved in the community is an opportunity to enlarge one's social network and seek development opportunities.

Overall, the goodness of fit of the models, as represented by Mc Fadden's R^2, is adequate. The variations in the dependent variable explained by the selected independent variables are as follows: 23% in Akkar, 16% in Menieh, 5% in Tripoli, 26% in Koura, and 12% in Batroun. The findings highlight the variations among the studied areas in terms of the influence of the various independent variables in explaining perceptions of the authorities' treatment of their citizens. This reflects the uniqueness and different constitutions of the areas included in the study.

During the focus group sessions, the participants were also asked about the poor public services delivery that had been seen in the survey findings, and people's perceptions regarding authorities' effectiveness and treatment. According to the participating local authorities, the monthly budgets assigned to each municipality are very limited and do not cover municipal needs. It was also reported that, in many cases, delays in providing the money are commonplace. The limited financial potential hinders progress and development by the municipal council, which is unable to cover many of its citizens' needs in general and public service delivery in particular. It was also mentioned that the municipalities are sometimes restricted by conditions laid down by the state, given the centralized system that limit their performance. Another important aspect is power, which was referred by the participants during the focus groups. The effect of power and personal relationship or social network is evident in the way authorities address needs and concerns, which is mainly based on political and religion characteristics, at the local and national level.

4.2. Market Domain: Labour

In terms of financial assets, Akkar is the least endowed area in terms of income followed by Menieh. Respondents in Koura and Batroun report the highest incomes, followed by Tripoli. The low incomes in Akkar and Menieh could be related to characteristics

linked to education level, type of occupation, and family size. The Akkar area shows the lowest level of education and the largest family sizes of the areas studied. In addition, incomes in Akkar mainly rely on natural resources in farming, fishing, and small enterprises, reflecting the rural nature of the area. The Akkar sample also had the highest percentage of unemployed: 32% of those interviewed in Akkar area were unemployed, compared with 15% in Menieh, 12% in Tripoli, 25% in Koura, and 10% in Batroun. It was reported during the focus group discussions that the high levels of unemployment, particularly in Akkar and Menieh, were leading to an increase in social problems such as drugs, violence, robberies, and other crimes. It is important to note that the impact of the Syrian war on the labour domain was emphasized during the focus group discussions, including by representatives from the Akkar and Menieh areas. They commented that Lebanese citizens were suffering from a lack of job opportunities and that many employers were replacing Lebanese workers with Syrian refugees because they could pay them less.

4.2.1. Correlation analysis and Logistic regression analysis
To study the degree of empowerment in the labour domain, indicators reflecting control over employment or occupation choices were used. Spearman's rho correlations were calculated to study the relationships between a range of indicators: education level, feeling of security in current occupation, choice in deciding occupation, and ease of changing occupation.
The following significant relationships were found:

- Weak positive relationships in Akkar between education level and feeling of job security (Sig = .333[**]) as well as between education level and the existence of choice in occupation (Sig =.307[*]). This reflects that individuals who have completed higher levels of education in Akkar have greater choices in deciding their occupation, and feel more

secure in their current occupation, than individuals who are less well educated. This is understandable since the Akkar area, as discussed earlier, has the lowest level of education of the areas studied with less than 20% having completed higher education.

- Weak to moderate relationships between there being a choice of occupation and a feeling of job security were found in Akkar (Sig = .251[*]), Menieh (Sig = .259[*]), and Tripoli (Sig= .253[*]). That is, individuals in these areas who have a choice in deciding their occupation feel more secure in their occupation than individuals who do not have a choice in deciding their occupation.

To further understand the findings, logistic regressions were performed to study factors that might influence the feeling of job security in each of the five areas. An individual's perception of security in their present occupation is a significant factor and was therefore taken as the dependent variable (Table 8.3).

Independent Variable	Batroun	Koura	Tripoli	Menieh	Akkar
Age	0.004004	0.002526	**-0.043089***	0.005261	**-0.067168***
Gender	**-2.000537***	0.029716	0.563470	**-1.947866***	**-1.530899***
Education	0.164578	**0.667514****	-0.196285	0.073982	0.261146
Income	0.058272	0.044134	-0.063654	0.052995	0.162755
Life change	**-1.330468***	**-2.276586***	-0.520127	0.924351	-0.057612
Organization membership	0.197509	-0.660740		-1.324511	0.079696
Decision	0.353620	-0.090203	**0.707917***	**1.286794***	0.009502
C	0.478392	-0.895859	2.082592	-1.518048	1.553353
McFadden R-squared	0.187077	0.201547	0.116611	0.209616	0.177877

Probability: * <0.05, ** < 0.1

Table 8.3: Logistic regression to investigate determinants of individual perceptions of job security

The independent variables considered were age, gender, education level, income, aspiration for life change, organization membership, and existence of choice in deciding occupation.

Of the significant findings, the following results are the most noteworthy: The probability of individuals feeling secure in their job is higher in Menieh and Tripoli when they have a choice in determining their occupation. Results also show that gender is an important factor in Akkar, Menieh, and Batroun, with men feeling less secure than women in their jobs. In Akkar and Menieh, this might be because these two areas can be characterized as masculine societies where women are less involved within their society. As a consequence, men are usually the main sources of income and decisions in the family and this may put a burden on the male head of household, particularly given the large families, relatively poor education, and lack of job opportunities. However, the finding also applied to Batroun, where women are more involved in the labour and social domains. Here, the reasons might be related to individual lifestyles in this area. Other significant findings are that the probability of individuals feeling secure in their job decreases with age in Akkar and Tripoli, and when individuals would like to change something in their lives in Koura and Batroun.

The goodness of fit of the models, as represented by Mc Fadden's R^2, is adequate. Overall, 17% of the variation in the dependent variable is explained by the selected independent variables in Akkar, 20% in Menieh, 11% in Tripoli, 20% in Koura, and 18% in Batroun. The variation in the independent variables found to partly explain the feeling of job security again reflects the uniqueness of each area and the different factors that influence empowerment in each area.

4.3. Society Domain: Community

In addressing the community sub domain, the survey showed that more than 95% of citizens in Akkar, Menieh, Koura, and Batroun

were aware of the main decision-makers regarding local public services. Here, Tripoli stood out: 17% of those surveyed did not know and 6% thought that nobody took decisions. However, everywhere, a large percentage of the citizens did not consider themselves involved in community decision-making processes. Tripoli, Koura, and Batroun led the way with 87%, 85%, and 80% respectively claiming non-involvement, followed by Menieh with 78% and Akkar with 65% making similar claims (Table 8.4).

Perception of involvement in Community decision making processes	Akkar	Batroun	Koura	Menieh	Tripoli	Total
Very involved	1%	1%	2%	3%	1%	1.6%
Fairly involved	6%	8%	5%	12%	5%	7.2%
Slightly involved	28%	11%	8%	7%	7%	12.2%
Not involved at all	65%	80%	85%	78%	87%	79.0%

Table 8.4: Perception of involvement in Community decision-making processes

4.3.1. Correlation analysis and Logistic regression analysis

To further understand the reasons behind the high level of non-involvement in decision- making processes, the relationships between various indicators combinations were studied (using Spearman's rho correlations). The indicators were education level, involvement in community decision-making processes, aspiration to be involved in community decision-making processes, and influence in community decision-making processes.

Notable results are as follows:

- Weak to moderate positive correlations between involvement in community decision-making processes and influence in community decision-making processes in Akkar (Sig = .366[**]), Menieh (Sig = .538[**]), Tripoli (Sig = .329[**]), and

Batroun (Sig = .247[*]). That is, individuals who are involved in community decision-making processes believe they have an influence on the community decision-making processes, and those uninvolved believe they have less influence.

- Weak positive correlations between aspiration to become more involved in community decision-making processes and influence in community decision-making processes in Akkar (Sig = .329[**]), Menieh (Sig = .337[**]), Koura (Sig = .314[**]), and Batroun (Sig = .239[*]). In other words, individuals who think that they can influence community decision-making processes aspire to be more involved in their community whereas those who do not think they can have an influence are not inclined to get involved.

- A weak positive correlation between education level and influence in community decision-making processes in Akkar (Sig = .210[*]) suggesting that individuals with a high level of education perceive that they have a greater influence on decision-making processes. This might be due to the generally low level of education in the Akkar area. This is due to the relatively late arrival of schools in Akkar, the continuing lack of access to schools, and poverty that forces many students to leave school to help their family livelihoods. Therefore, for those living in the Akkar area, having completed a high level of education presents an opportunity and an advantage, not open to the less well educated majority, to see options and make purposeful choices that enhance their abilities to influence decision-making processes.

To further understand the relationships, logistic regressions were performed to study the influence of various factors on an individual's involvement in community decision-making processes in each of the five areas. Individual involvement in community decision-making processes is seen as an important factor and was therefore taken as the dependent variable (Table 8.5). The independent variables considered were age, gender,

education level, income, aspiration for life change, organization membership, aspiration to be involved in community decision-making processes, and perception of influence in community decision-making processes.

Independent Variable	Batroun	Koura	Tripoli	Menieh	Akkar
Age	**-0.088534***	0.012315	-0.013233	0.002253	0.036672
Gender	**2.283146***	1.326512	-0.465089	-0.907656	0.762311
Education	-0.356629	**0.704542****	-0.606467	-0.432047	0.162105
Income	0.038748	-0.041889	0.080175	0.031544	-0.117735
Life change	**-2.210232***	-0.816062	0.425527	0.199654	-0.103994
Organization membership	1.123032	-0.562743	1.269680	**2.307381***	
Like Involvement	-0.212059	0.456245	0.584451	**0.781516***	-0.233986
Influence	**0.894163***	**0.646492****	**1.027577***	**1.347295***	0.505173
C	2.344762	-8.994422	-2.964509	-4.574730	-2.783656
McFadden R-squared	0.266223	0.159095	0.203103	0.382225	0.061482

Probability: * <0.05, ** < 0.1

Table 8.5: Logistic regression to uncover determinants of an individual's involvement in community decision-making processes

The following significant relationships are particularly interesting: The probability of individuals in Menieh, Tripoli, Koura, and Batroun being involved in community decision-making processes is higher when the individuals perceive they have a greater influence on decision-making processes. Further, the probability of individuals being involved in community decision-making processes in Menieh is higher if the individual belongs to an organization or aspires to become more involved in decision-making community processes.

The goodness of fit of the models represented by Mc Fadden's R^2 is adequate. Overall, 6% of the variation in the

dependent variable is explained by the selected independent variables in Akkar, 38% in Menieh, 20% in Tripoli, 15% in Koura, and 26% Batroun.

The question of citizens' involvement in the community was also raised during the focus group sessions with the local authorities of the different coastal cities and villages. They claimed that citizens do not want to participate because they feel deceived and are dissatisfied with the outcomes. In addition, the participants perceived that individuals' participation in the community was influenced by the overall political ambiance and that citizens simply did not trust public institutions.

5. CONCLUSIONS

The findings are in line with the statement that the degree of empowerment in one domain can be associated with another, similar, degree of empowerment in a different domain or sub-domain (Alsop et al., 2006). Even though agency differs between different areas, the combination of agency and opportunity structure result in similar degrees of empowerment for the three sub domains in each area. Thus, although the determinants of empowerment differ between one area and another, depending on the geographical location, socioeconomic situation, and marginalization of the area, the opportunity structures in these areas, characterized by a lack of adequate political representation, lack of transparency in institutional activities, and political influence on various activities, have a significant and similar influence on individuals' degrees of empowerment and limit their decisions and expectations for a better outcome. Individuals in Menieh, Tripoli, Koura, and Batroun do have the capabilities and opportunities to make choices, but they do not really take advantage of the opportunities to choose and improve their livelihoods. However, in the Akkar area, many citizens have few

such opportunities and are also limited by the formal and informal institutional contexts.

Elsewhere, education has been seen as "*the most frequently recurring determinant of empowerment*" (Samman and Santos, 2009:20) and, based on our results, education would also seem to be a crucial factor in the Akkar area. This is classified as one of the most deprived areas in Lebanon (Das and Davidson, 2011) and has all the typical characteristics of poor and marginalized rural communities, with bad infrastructure and poor quality services, including in education, in addition to other features, such as limited income sources and inadequate support from government and civil society, that have produced a cycle of poverty and increasing deprivation. In such a situation, a higher level of education offers better opportunities and increases people's capacity to visualize options, express preferences, and make purposeful choices.

The coastal area of north Lebanon provides a good illustration of the way that degrees of empowerment can vary within communities within a relatively small geographical area. The study also shows that empowerment should not only be considered as an 'extension of agency'. In many cases, despite the presence of capacities and opportunities, the desired outcomes are not achieved due to structures that can inhibit available choices.

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CHAPTER 9

RESILIENCE AT THE MUNICIPAL AND COMMUNAL LEVEL

The Significance of Trust and Cooperation in Environmental Management: A Case Study of Al-Fayhaa Union[34]

Nivine H. Abbas

Abstract: Developing the insights on individual resilience that were presented in Chapter 8, the current chapter takes resilience beyond personal empowerment and explores the socio-cultural and political dynamics that shape resilience at a communal level. The chapter starts from the premise that the effectiveness of the Lebanese government to address environmental challenges is constrained by a large variety of factors and that trust is one of the most important among them. Yet, knowledge of trust relationships and as a factor affecting environmental management is significantly lacking in Lebanon. The results of our survey demonstrate a lack of trust among the stakeholders that hinders environmental management. This lack of trust of the government undermines citizens' participation in environmental activities and their compliance with regulations related to environmental management.

Keywords: Trust, cooperation, participation, government legitimacy, solid waste management

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1. INTRODUCTION

Lebanon is a country that is rich in natural resources. Nevertheless, it has long been threatened by environmental degradation and threats which, not only affect the natural environment, but also people's health and economic development (Sarraf et al., 2004; Geara-Matta et al., 2010), their well-being (Khagram et al., 2003), and human security (Shambaugh et al., 2001; Khagram et al., 2003; Huseynov, 2011). Lebanon's environment has been, and still is neglected (IMAC, 2007a). Lebanon's environmental degradation can be attributed to different factors, one of which is armed conflict. Armed conflicts represent a particular threat to the environment, not only because of direct impacts (El Asmar et al., 2012; World Bank, 2007; Ministry of Environment, 2006); but also because of the break-down of trust between different stakeholders and the sectors involved in managing the country (Abbas, 2014; Issa, 2014). Since the 1975 civil war, the repeated arm conflicts in Lebanon have caused social fragmentation (Bazzi, 2007) and led to weak institutions and increased corruption. Second, human activities in the agricultural, fisheries, industrial and tourist sectors also contributed to environmental deterioration of the coastal area in North Lebanon. These human activities resulted in soil erosion; depletion of underground water resources; pollution from pesticides, fertilizers and agricultural by-products; and, seawater pollution from unregulated industrial waste disposal (IMAC, 2007a). Finally, environmental deterioration has also resulted from political and institutional weaknesses. The ongoing instability of Lebanon greatly hinders environmental protection (McCornack, 2012). The Government is said to be unable to take proper decisions, to propose necessary laws to protect the natural environment (Bazzi, 2009; Kisirwani, 1992) and to enforce existing laws. Masri (2009) argues that the main reason behind several environmental issues is poor management and inadequate

enforcement of existing laws. For example, disregard for construction laws has resulted in much illegal building (El Asmar et al., 2012).

The link between trust and successful natural resources management (Idrissou et al., 2013; Baral, 2012) and project management (Pinto et al., 2008; Berkes, 2009) is considered to be fundamental. According to Hoffman *et al*. (2001), human dimension, one of which is trust, is the single most significant determinant of project success. It is also argued that trust has an important role in building positive relationships among project stakeholders (Pinto et al., 2008). This notion has developed within the framework of natural resources planning and public dependence on government agencies to protect natural areas and provide public welfare (Davenport et al., 2007). Trust is considered to be the basis for building and sustaining relationships between environmental management agencies and communities affected by management action and plans (Sharp et al., 2013). It is said that trust cements and reinforces the relationships among the stakeholders involved in a project, thus determining its success (Bresnen and Marshall, 2000; Chan et al., 2003). Trust among stakeholders is perceived by many scholars to be crucial in the implementation of public programs (Tyler, 1998; Gilson, 2003; Tsang et al., 2009). Trust explains, at least to some extent, why participants decide to cooperate or not (Ostrom and Walker, 2003). Based on the social exchange theory, the less citizens have trust in the stakeholders involved in management process, the less they will be willing to comply with rules and regulations, to adjust their behaviour, or to volunteer to contribute (Axelrod, 1984). This theory argues that citizens will be willing to comply with rules and regulations and to adjust their behaviour provided they have confidence that the private or public sector organizations are able to produce a beneficial event or to provide beneficial services. One way to gain confidence is by having more trusting

relationships. While 'trust' has been referred to in the literature in this respect, it has not been systematically studied in the case of Lebanon. To help fill this gap in knowledge, this research investigates the trust relationships among the various stakeholders involved and its impact on environmental management process in north Lebanon.

In this chapter we want to identify which factors contribute to poor environmental management process, and how municipalities cope with environmental degradation. We assume that trust is a key component of effective implementation of management processes and programs. We look at the extent to which citizens themselves indicate their preparedness to comply with existing regulations and to volunteer for environmental management initiatives. Their cooperation is, amongst others, related to their trust in the functioning of government authorities, and directly touches upon the legitimacy of the fragile political system. We studied the citizens' perception by analyzing a survey conducted in 2011 involving 499 citizens. Also, using Fuzzy cogitative mapping approach (FCM), we took solid waste management in Al Fayhaa Union as a case study to discuss all the factors that affect this management process in this area. We organized a round-table discussion that included five working groups representing stakeholders involved in solid waste management (SWM) in the Al-Fayhaa Union area of Lebanon: from the public sector, from the private sector, and from grassroots movements. In our research we studied what is the particular role of trust on variables that affect, or are affected by, solid waste management in Al-Fayhaa Union, Tripoli, Lebanon? How is trust related directly and indirectly to solid waste management? Finally this research show that trust relationship is one of the factor that have an important impact on the environmental management in Lebanon. Nevertheless, it acknowledges that some stakeholders successfully circumvent

environmental regulations, using trust and cooperation with public authorities to effectively obstruct environmental regulations. We argue that the willingness to cooperate for the general interest (or public good) is much lower than trust and cooperation for personal benefit.

This research used a definition of trust by Morton Deutsch when asking respondents questions about their specific expectations: "To trust another person /organization to produce a beneficial event X, or *to provide a service*, an individual/organization must have confidence that the other individual/organization has the ability and intention to produce it" (adapted from Deutsch 1960: 125). Although this definition may seem to be outdated, we found it was still valid and applicable to the various stakeholders involved in environmental management in Lebanon. We used and communicated this definition to the people interviewed. The chapter is structured as follows. Section 2 describes the context and setting of this research. Following this, Section 3 presents and discusses the results from both survey and Fuzzy cogitative mapping before Section 4 draws conclusions and recommendations.

1.1. The stakeholders

The definition of stakeholders adopted in this research is that of Freeman who states: stakeholders are "those groups who can affect or are affected by the achievement of an organization's purpose" (1984: 49). Natural environmental problems are complex and multi-scale and require multiple actors and agencies (Reed, 2008). In Lebanon, three broad categories of stakeholders are involved in the environmental management process, whether directly or indirectly: stakeholders in the public sector; stakeholders in the private sector; and, citizens.

The environmental management process primarily is in public sector hands. The public sector at a national level consists

mainly of policy makers, ministries, Government and its institutes (MOE/UNDP/ECODIT, 2011). Politicians, normally outside the public sector, are key-decision makers within the ministries. Therefore, they are included in our category of the public sector. It is the municipality that is charged by law to oversee and implement environmental projects benefiting communities within its area of jurisdiction at the local level (IMAC, 2007b). Nevertheless, many public organizations, at both local and national levels, are administratively weak and are not able to implement developmental projects or provide adequate services to the citizens (Atallah, 2012).In addition, and significantly, the private sector, which is considered a secondary stakeholder, also plays an important role in environmental planning and management in Lebanon (IMAC, 2007a). The private sector broadly includes private companies, but also academic or research centres, and experts (to the extent these are being paid for their services). Private companies work as consultants for the public sector, as contractors, or as providers of specific services, such as collecting solid waste or water supply. The public and private sector are closely related and, to some extent, interwoven. Various forms of 'cooperation' between the public and private sectors in environmental management are: (a) cooperation in project implementation; (b) cooperation through advisory work or consultation; (c) cooperation through contracting; or, (d) cooperation through service provision. A number of 'councils and funds' play a key role in the disbursement of funds from public to private sectors. A number of joint-stock ventures were also established. These funds, councils and joint-stock ventures have played a crucial role in rehabilitation and reconstruction of major infrastructure. Thereby, they have an impact on the natural environment. Last, but not least, citizens can play a crucial role in the environmental management process through complying with

laws and regulations, by volunteering in environmental initiatives, or by resisting new plans.

2. CONTEXT AND SETTING

2.1. Coastal areas of north Lebanon

This research was generally undertaken in the coastal areas of north Lebanon which includes the five main areas of Akkar, Minieh-Dinnieh, Tripoli, Koura and Batroun. This 100km long stretch of coastline constitutes around 40% of the Lebanese coast (Mitri et al., 2012) and consists of 24 villages and cities where most of the population lives (IMAC, 2007a). The population comprises people from different backgrounds, religions, social and economic levels. Environmental pressures and problems, such as solid waste dumping and wastewater discharge, exist here and in many other areas in Lebanon. These have been exacerbated by an inflow of refugees. North Lebanon remains affected by repeated episodes of armed conflicts which have contributed to social fragmentation and disruption (Bazzi, 2007), weak organizations, increased corruption (Leenders, 2012) and the break-down of trust between citizens and the Government. These facts make this area a good place for our research to fill the gaps in knowledge. The survey conducted has covered all coastal areas of north Lebanon.

2.2. Why the Al-Fayhaa Union as a case study?

Solid waste problems in Lebanon generally, and especially in North Lebanon, continue to degrade the environment (Sarraf et al., 2004; IMAC, 2007a; IMAC, 2009). This problem is not only negatively effecting the natural environment but also human health (Sarraf et al., 2004). Solid waste management is generally considered to be one of the central environmental health services and a fundamental part of basic urban services (Ahmed and Ali,

2004). In Lebanon, especially since the civil war, solid waste collection and disposal services have deteriorated significantly (El Hoz, 2007; ELARD, 2004). Today, there is no efficient or well-implemented national policy on solid waste management (Massoud and El Fadel, 2002; IMAC, 2007a; European Commission, 2006; El-Hoz, 2007; MOE, UNDP and ECODIT, 2011) and the Lebanese Government is seen as unable to address these challenges (IMAC, 2007b; IMAC, 2009; Habib, 2012; Abbas et al., 2013; MOE, UNDP and ECODIT, 2011).

The Al Fayhaa Union area (Figure 9.1) which includes the municipalities of Tripoli (the second largest city in Lebanon), El-Mina, and El-Beddawi was chosen specifically as a case study area for solid waste management for the following reasons. The Al-Fayhaa Union has the largest population (around 330,000 in 2007) of the unions found in the coastal area of North Lebanon (UNEP, 2009). In the Al-Fayhaa Union, as in all other areas of Lebanon, the Lebanese Government is unable to address many of the environmental challenges, including the disposal of solid waste. There are many reasons for this including the weakly defined national planning authorities (IMAC, 2007b); the lack of continuity in developing, implementing, and managing environmental programs (IMAC, 2009; MOE/UNDP/ECODIT, 2011); the lack of cooperation among public institutions involved in environmental protection generally (Habib, 2012; Abbas et al., 2013) and solid waste management specifically; and the failure of citizens to cooperate and comply with environmental laws and regulations (Abbas et al., 2014). In Lebanon, municipal solid waste is still regularly dumped in uncontrolled seafront landfills, on beaches, or inland. In the area considered, Al-Fayhaa Union's largest seafront dumping site is at Tripoli and it receives municipal solid waste from around 400,000 people. This dumpsite, as with many other dumpsites in Lebanon, is a source of local pollution (European Commission, 2006; ELARD, 2004).

In Al-Fayhaa Union, a private company, LAVAJET, is responsible for municipal solid waste collection and street cleaning. Another private company, BATCO, is responsible for managing the landfill. The landfill of Tripoli receives around 280 tons daily, not only from the three major cities in Al-Fayhaa Union but also from the municipality of Al Qalamoun (a village in the northern coastal area of Lebanon), from a slaughterhouse, from a Palestinian refugee camp, and from a few resorts (UNEP, 2009). The landfill reached its maximum capacity in 2010, but is still open and in use until today. This is a huge problem and a threat to the health of the people.

This study area was also chosen specifically by 499 citizens surveyed who chose the solid waste collection by Lavajet Company in this area as the most positive initiative in the coastal area on North Lebanon. Many citizens could compare solid waste collection today with earlier times when this operation was a municipality responsibility. My personal background is also rooted in Tripoli which is one of the three cities that form this union and this, also made it easier for me to choose the Al-Fayhaa Union as a study area.
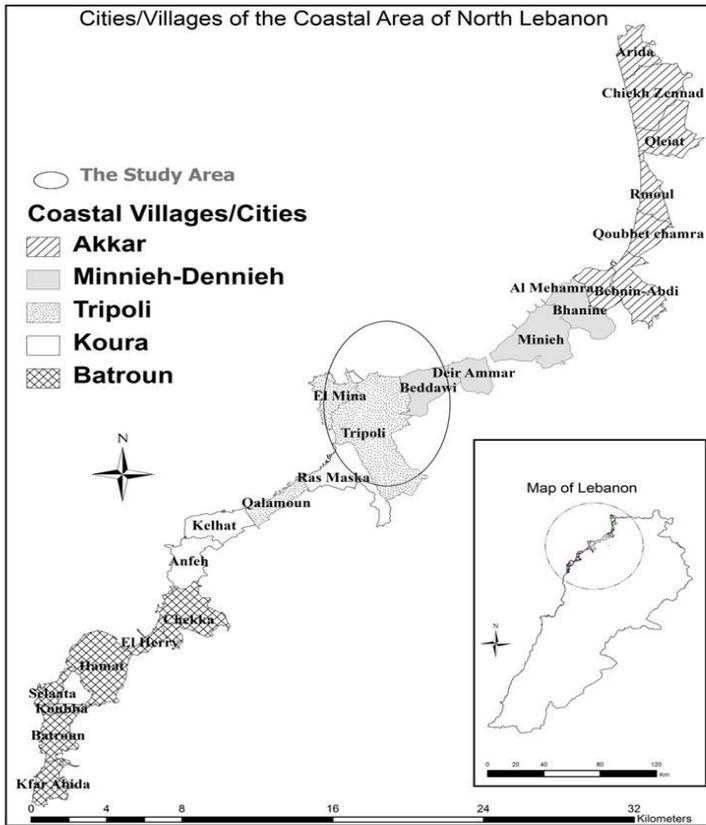
Figure 9.1: Showing villages and cities in coastal North Lebanon, including the Al –Fayhaa Union

3. FINDINGS AND DISCUSSION
3.1. From the Survey

The results of the survey reveal that 96% of the citizens reported that they perceive there is lack of trust between citizens and public authorities involved in environmental management at national level in Lebanon(whether in general or in relation to provision of services and decision making). 60 % had little confidence or trust that the municipality provided a good and sufficient management for environmental problems in their area (Abbas et al., 2014) This

finding shows that citizens did not trust stakeholders within the public sector at both local level and national level. These findings reflect the low level of political trust or "vertical" trust (Allen, 2011). This result, although rarely mentioned, is supported in the literature. For example, it was mentioned that citizens regard officials as corrupting forces in society (Haddad, 2002). Also a recent study by Issa (2014) stated that citizens in coastal area of north Lebanon did not trust public institutions nor trust the public services. Therefore, political trust in Lebanon is perceived to be significantly low.

Some scholars consider these trust scores as a measure of how well the political system is performing in the eyes of its citizens (Newton, 2001). The low level of political trust suggests the politicians and or the institutions of the political system are functioning poorly (Newton, 2001). The respondents referred to both. It is argued that "political trust gives legitimacy to political institutions" (Haddad, 2002:202). The low level of trust in the governance authorities and institutions in Lebanon is a proxy for the legitimacy of the government and its institutions. Political trust increases the practical possibilities of social cooperation; for example, the probability that citizens will pay their taxes (Newton, 2001).

The results of this research suggest that the lack of political trust reduces the chances that people will comply with laws or participate (volunteering) in environmental initiatives. This was confirmed by the citizens themselves in many of their answers. 97.4% of the citizens agreed that the more you trust decision makers and stakeholders involved in the environmental management process, the more you (as citizen) are willing to comply with relevant laws and regulations. Also 99.2% of the participants agreed that for them as citizen, the more they trust a stakeholder involved in an environmental management initiative,

the more they are likely to cooperate in this initiative (Abbas et al., 2014).

When citizens were asked if they have ever participated in an environmental initiative, 63.3% answered no. Also 92.2% disagreed that citizens in Lebanon play an important role in the environmental management process. When asked an open question as to why people did not participate in environmental initiatives, many of the respondents said they simply did not trust the stakeholders involved in the environmental initiatives and they thought most initiatives were seen as being politicized (Abbas et al., 2014). This result is confirmed by the Social Exchange Theory (Axelrod, 1984) which state that the lack of trust and confidence in stakeholders involved in environmental initiatives encourages poor participation by citizens in environmental initiatives or activities. Many citizens stated they think giving their opinion is useless since that the decision makers (represented by politicians and administrators) didn't ask them to participate in the decision-making and planning process and are sure they will not take their opinions into account during any implementing phase. This finding goes parallel with the findings of a study done by Issa (2014) which argues that citizen in north Lebanon do not want to participate or get involved in the community because they feel deceived and are dissatisfied with the outcomes.

This research argues that this directly touches upon the legitimacy of the fragile state in Lebanon. This is confirmed by Prohl (2004) who state that the system must facilitate public participation in decision-making process in order to create legitimacy and to create the feeling that citizens' interests or preferences are taken into account and are reflected in the system. This result agrees with research which argue that public participation, as one measure of political trust (Newton 2001), is a vital part of public decision making in general, and in environmental policies specifically (Tsang et al., 2009).

According to Boedeltje and Cornips (2004), citizens' involvement in the policy making process helps to lower resistance to political decisions and, as a result, the decision making process gains more legitimacy in the eyes of the public (Prohl, 2004; Solitare, 2005). Webler and Tuler (in Ginger 2013) stress that citizens need to feel that they can make a difference and that they are listened to. Our research supports these finding. Citizens have stated that they know much more than decision makers, as their knowledge about the environmental problems comes from everyday experiences and the local problems that affect them. This point of view is also supported by some scholars such as Elias and Alkadry (2011). Christensen et al. (2011) argue that citizens' acceptance of, and trust in, the government's approach to problem solving is very important in a democratic system. Government derives its legitimacy from the support it takes from its citizens (Schaeffer and Loveridge, 2002).

The finding of this research showed that citizen believes that trust and cooperation among the various stakeholders involved is important for better management in Lebanon. This is important for better and more successful decisions. Based on citizens' perception, the lack of trust among the public stakeholders, is preventing them from taking proper decisions and, thus, achieving good environmental management. This is in return is considered as one of the reasons which leads to a lack of citizen's trust in public sector.

3.2. From the Fuzzy Cognitive Mapping[35]

Considering the solid waste management as a case study, this research tried to investigate from the various stakeholders'

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[35] Special thanks are due to Dr. Husni Charif and Eng. Rabih Mohsen for their technical assistance as well as for the moderators who facilitated the Fuzzy Cognitive Mapping exercise: Dr. Roula Al-Daia, Ms. Nancy Zaarour, Ms. Mireille Jazi and Mr. Edward Antoun.

perceptions the role of "Lack of trust relationships" compared with the other variables in the system. The result of the drawing maps based on the 45 predefined list of variables given to the 29 participants should that trust relationship on top of the ten variables from the 49 variables (45 predefined and three added by the participants) in terms of centrality identified by each sector (Table 9.1).

Rank	Public	Centrality	Private	Centrality	Grassroots	Centrality
1	Decentralization	2.82	Political will	8.16	Waste minimization	5.66
2	Lack of trust relationships	2.66	Lack of trust relationships	4.66	Poor processing and poor treatment of solid waste	5.00
3	Lack of cooperation	2.66	Lack of national environmental policy	3.83	Current operating landfill	5.00
4	No solid waste sorting	2.50	Good awareness of citizens	2.83	Lack of funding	4.32
5	Current operating landfill	2.17	Environmental degradation	2.50	Lack of trust relationships	4.00
6	Availability of space for a new landfill	2.16	Lack of standards and legislation	2.50	Armed conflict	4.00
7	Lack of law enforcement	2.00	Armed conflict	2.33	Waste collection system	4.00
8	Lack of urban planning (zoning)	2.00	Economic situation	2.16	Lack of national security	4.00
9	Private sector involvement	2.00	Lack of funding	2.00	Private sector involvement	3.98
10	Media	1.99	No solid waste sorting	2.00	Citizens/households	3.33

Table 9.1: Top ten variables in terms of centrality in each sector.

In social network analysis, centrality is the more analyzed indices in terms of map complexity and is represented by the sum of both out-degree and in-degree relationships of a variable. It reflects the connectivity of this variable to other variables in the map showing the cumulative strength of its connections (Eden et al., 1992). The higher the centrality value, the more important a variable is in the system. Table 9.1, showing the most central variables, helps clarify which variables are most important and central in the Fuzzy Cognitive Mapping (Zhang et al., 2013). This table shows that the public and private sector stakeholders put trust relationships (or the lack thereof) in second place, and the grassroots group put this in fifth equal place (along with "Armed conflicts", "Waste collection system", and "Lack of national security").

The analysis also shows that cooperation is the third most important variable for the public sector stakeholders. In other words, for the public sector stakeholders, who are the primary stakeholder in solid waste management in Lebanon both trust and cooperation are considered one of the most important variables in solid waste management. This finding is consistent with findings by many scholars (Pinto et al., 2008; Delisle, 2004; Kadefors et al., 2007; Chan et al., 2003). Interestingly, the private sector and grassroots stakeholders attached much less importance to "Lack of cooperation" as a variable with a relationship with solid waste management. It is also important to note that in all three maps "Lack of trust relationships" is an ordinary variable: it affects and is affected by other variables.

3.2.1. The "Lack of trust relationships" variable

In order to analyze in greater detail the role of trust relationships as a variable affecting or being affected by the solid waste management system, we created 'neighbourhood maps' for this particular variable showing only those concepts that are directly

connected with "Lack of trust relationships". The "neighbourhood maps" were used to make the analysis easier and clearer. This research zoomed only on the grassroots' map in order to better understand their perception about trust relations.

Figure 9.2, representing the grassroots' point of view, shows a negative relationship between "Lack of trust relationships" and "SWM" while this group believed that "Lack of trust relationships" decreases "Waste minimization" and the "Citizens/households" contribution. All neighbouring concepts or variables directly connected to the "Lack of trust relations" concept and their linkages for the Grassroots group. Solid arrows represent positive and dotted arrows negative effects; the sizes of circles reflect the centrality of the variable.
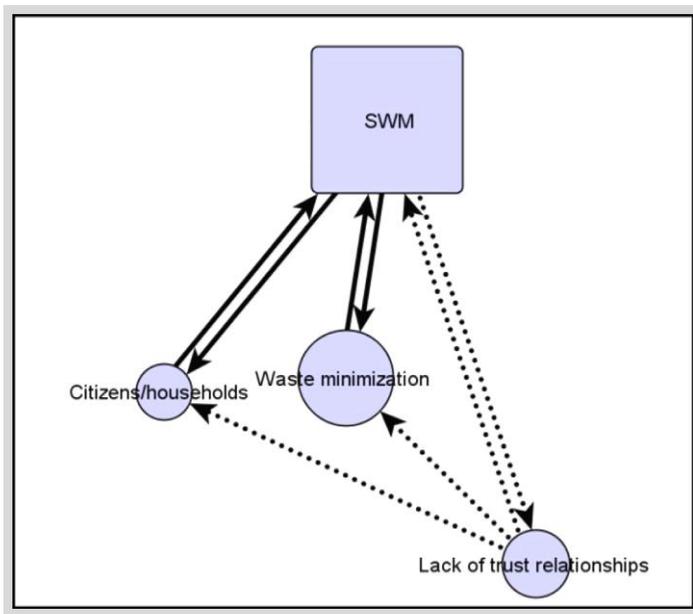

Figure 9.2

Based on the grassroots' perceptions, the trust relationship can play an important role in the success of solid waste management since solid waste management decreases when "Lack of trust

relationships" increases (i.e. trust deteriorates) and vice versa. This result is supported by scholars who note the link between trust and the success of projects and management (Pinto et al., 2008; Kadefors et al., 2007; Hoffman et al., 2001). The negative relationship between "Lack of trust relationships" and "Waste minimization" also indicates that the less trust there is, the less waste is minimized, an aspect of solid waste management.

This map shows that enhancing trust between citizens and the public and private stakeholders involved in solid waste management can be one way to encourage citizens to comply with laws and regulations related to solid waste or change their behaviours and try to minimize their waste production. This finding is in general agreement with Social Exchange Theory (Axelrod, 1984). This is also supported by the relationship found between "Citizens/households" and "Lack of trust relationships". When "Lack of trust relationships" increases, citizens will play a less important role in solid waste management. That is, the less citizens have trust in the stakeholders involved in solid waste management, the less they will be willing to comply with rules and regulations, to adjust their behaviour, or to volunteer to contribute. The relationship between "Citizens/household" and "SWM" shows that a link exists between the citizens' sector and solid waste management. This is consistent with findings elsewhere regarding the important role of citizens in environmental management in general (Elias and Alkadry, 2011). This supports Berkes (2009), who argues that people affected in their livelihoods by management decisions should have a say in how those decisions are made.

3.3. The "wasta" concept and its relation to trust

The result from survey and the Fuzzy cogitative mapping both showed that trust and cooperation, between citizens and stakeholders in the public and private sector are indeed important

to jointly address environmental problems. Nevertheless, this research has also found that trust and personal relations are also used to jointly circumvent existing environmental regulations. In Lebanon, as in many other Middle Eastern societies, 'cooperation' has two faces: one that increases the likelihood of successful implementation of policies and programs; and one that seems to achieve the opposite. Wasta according to Smith et al. is 'the process whereby one can achieve goals through links with key persons in positions of high status (2012, with reference to Cunningham and Sarayrah, 1993).

When citizens were asked their opinions on this issue, many agreed saying that, from their experience, they had noticed that, nowadays, some citizens and private sector stakeholders use the "wasta" with their leaders to circumvent laws, including environmental ones. According to some citizens, even public sector stakeholders use "wasta" with public authorities in higher positions to bypass laws and regulations. According to corruption – trust theory, citizens who have lack of trust in public authorities and consider that they are living in a corrupt society, feel that in order to survive they also have to take part in this corruption. This could be an explanation of why some people use trust and cooperation with public authorities to effectively obstruct environmental regulations. This also agrees with Levi (1998), and argues that citizens and some of the private sector stakeholders perceive that there is lack of trust in the public sectors stakeholder of involved in environmental management. That there is not enough fair and just implementation for environmental policies can explain why some stakeholders use trust and cooperation relations for their personal interest instead of the general interest. This result is also supported by some scholars who claim that individuals with low in trust are considered to be less likely to contribute to public goods than those with high in trust relationships and vice versa (Parks 1994 in Parks et al. 2013).

According to Leenders, some private companies in Lebanon dealing with solid waste management trust the political leaders, because of their personal interests and financial benefits, to cooperate with them and assist them in making agreements and contracts with the Government (2012). Another example is illustrated by Allès (2012) who argues that many of the local political elites showed remarkable resistance to the public –private partnership project in water sector in Tripoli. It was mentioned that not only the clients but also some elites used their relationships or the "wasta" to try to get or hire someone in a job, in the context of cronyism in public administrations.

4. CONCLUSIONS AND RECOMMENDATIONS

The results from the survey showed that citizens did not trust stakeholders within the public sector at both local and national level. The results of the survey clearly demonstrate that, from a citizens' perception, there is a positive link between trust relationships on the one hand, and a citizen's participation (in terms of participation in joint activities, compliance with regulations, and adjusting) and the legitimacy of the government and its organizations on the other. One of the reasons what citizens do not participate in environmental management initiatives in Lebanon is because they do not trust the stakeholders involved in the environmental initiatives and they think most initiatives were recognized as being politicized. This result is implicit in social exchange theory (Axelrod, 1984). The lack of trust and confidence in stakeholders involved in environmental initiatives encourages poor participation by citizens in environmental initiatives or activities.

Applying the Fuzzy Cognitive Mapping method to a solid waste management case study confirmed earlier findings that trust is a prerequisite for effective environmental management. Various

respondents ranked this higher or lower in the list of variables linked to environmental management, depending on their denomination (public/private sector or grassroots organizations). On the other hands, the results of this chapter disagreed to some extent with other findings that human dimension of project management including trust is to be the single most important determinant of any project success or management (Hoffman et al., 2001). The results of this research have found that other factors are considered by stakeholders to be higher in importance and were better ranked than trust to the solid waste management. Specifically, the analysis of the cognitive maps (Table 9.1) shows that "Lack of trust relationships" is a central variable and ranked second by the public and private sector stakeholders (after "Decentralization" and "Political will" respectively) and fifth by the grassroots representatives (after "Waste minimization", "Poor processing and treatment of solid waste", "Current operating landfill" and "Lack of funding") of the 49 variables identified as having a relationship with solid waste management. It is not surprising that some variables were better ranked. Some of the factors stated were already mentioned earlier in literature as a common problem in Lebanon. Scholars have already mentioned the problem of centralization in the Lebanese administrative system, both organizationally and geographically (Abou Assi, 2013). Thus, decentralization was stressed on by the public sector. As for the "Political will" that was ranked first by the private sector stakeholders, or the other variables such as "Waste minimization" and "Lack of funding" that were rank higher by the grassroots, this study argues that all these variables are directly or indirectly linked to "Lack of trust relationships". Interaction of the variables reveals the complexity and nuance in trust relationships in Lebanon, and shows the important impact they have on the environmental management process.

This research supports the literature that has already addressed the importance of trust in management processes (Pinto et al., 2008; Kadefors et al., 2007; Hoffman et al., 2001; Berkes, 2009). This research shows that trust is an essential element that affects and is affected by solid waste management specifically and environmental management generally in Lebanon. Although trust and cooperation were found to be weak, there was also evidence that such relationships are used to hinder environmental management; specifically where some stakeholders use 'wasta' to effectively obstruct measures that could reduce environmental problems. This finding is supported by other studies (e.g. Leenders, 2012; Wakim, 1998).We argue that the willingness to cooperate for the general interest (or public good) in Lebanon is much lower than trust and cooperation for personal benefit

The natural resource base is so important for peoples' livelihoods, that the lack of capacity to address environmental degradation is an important manifestation of limited resilience at municipal level. On the basis of the result, we do not claim that trust relationships are the only reason behind the weak environmental management process in Lebanon; nor do we argue that trust is the only factor that enhances cooperation or citizen participation. However, we do conclude that citizens' perceptions show that trust is one of the factors that play a substantial role in the environmental management process in Lebanon.

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PART 3 – INTERNATIONAL POLICY

CHAPTER 10

RESILIENCE FROM AN INTERNATIONAL PERSPECTIVE

Determinants of Official Development Assistance in Lebanon: A Pre- and Post-War Assessment[36]

Roula Al Daïa

Abstract: The current chapter is the first of our two final empirical chapters that together constitute Part 3 of this book. Part 3 is devoted to linking studies of vulnerability – of exposure and sensitivity as discussed in Part 1 and resilience as explored in Part 2 – to the political economy of international policy-making. This Chapter 10, accordingly, examines the determinants of Official Development Assistance (ODA) flows received by Lebanon from 1970 to 2010. Over this period of time, Lebanon's economy and socio-political reality has been under strain due to the outbreak of the civil war (1975-1990). More specifically, the chapter attempts to understand the linkage between ODA and civil armed conflict and as well as other factors that might affect these flows. The importance of examining ODA lies in the fact that these funds might serve as resources in the reconstruction process – as bulwarks of resilience, in other words. ODA per capita amounts in Lebanon, the chapter finds, is positively linked to both GDP per capita and occurrence of armed conflict. This highlights the importance of political factors in aid allocation.

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Keywords: Official Development Assistance, Armed Conflict, Economic Development, Lebanon.

1. INTRODUCTION

OECD's Development and Cooperation Directorate (DCD – DAC) defines Official Development Assistance (ODA)[37] is as 'grants and loans to countries and territories on the DAC list of ODA recipients and to multilateral agencies which are: (a) undertaken by the official sector; (b) with promotion of economic development and welfare as the main objective; (c) at concessional financial terms […] Grants, loans and credits for military purposes are excluded. Transfer payments to private individuals […] are in general not counted'. Therefore, ODA's main objective is development-oriented; although political and/or human rights motivations cannot be excluded (more details are given in the literature review section). The United Nations Development Program even considered that 'ODA is allocated in ways that seem strange and arbitrary – however you look at it' (UNDP, 1992).

Lebanon makes it to the DAC list of ODA recipients, and evidence of aid reception goes back as far as 1960 (DAC Online Database[38]). A closer look at the data shows that ODA has peaked during the war in 1981 and later on in the post-1990 period, from 2006 till 2008.

More generally, the Lebanese economy was permanently scarred by civil armed conflict, with colossal destruction requiring massive funds for reconstruction, which left the country with high

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[37] The full definition can be found at:
http://www.oecd.org/dac/dacglossaryofkeytermsandconcepts.htm#ODA.

[38] http://www.oecd.org/dac/stats.

levels of fiscal deficits and public debt and in bad need for external assistance in that respect (Harvie and Saleh, 2008).

The objective of this paper is to study the evolution of Lebanon's ODA over a period of 30 years, spanning from 1970 to 2010, and inclusive of the 1975-1990 conflict. The paper also aims to explore the nexus between ODA allocation and armed conflict as well as several socio-economic and political variables, for a deeper understanding of determinants of these inflows and their potential impact on the country. More particularly, the paper will attempt to uncover whether ODA flows were higher during or after the conflict in order to understand whether these funds were motivated by crisis relief during war or socio-economic reconstruction after the war. Section 2 will present an overview of the literature on the topic, with a focus on the literature pertaining to ODA in war-affected countries. In section 3, a model of ODA determinants will be developed and analyzed, with clear explanatory and explained variables. Section 4 will conclude.

2. LITERATURE REVIEW

Literature about ODA can be broadly divided into two main parts. Some studies research the impact of various socio-economic and political factors on ODA allocation; in other words they take ODA as a dependent variable while other papers consider the impact of ODA on other factors, in other words, they take ODA as an independent variable.

2.1. ODA as a dependent variable

Several studies have attempted to look at the determinants of ODA. Wall (1994) extends a model of one donor's bilateral ODA to a model integrating several donors. Taking three separate time periods, and data for net ODA recipient countries, the author regresses ODA per capita on the following independent variables:

infant mortality, GNP per capita, an indicator of human rights and a population size variable. Results indicated that only per capita income (of the recipient country?) and population were correlated with ODA.

Alesina and Dollar (2000) found that aid is influenced as much by political considerations as by economic needs of the recipient. In this respect, they emphasise the importance of colonial past and political alliances as well as the importance of the democratization process in attracting aid. In comparison, Foreign Direct Investment (FDI) seems to be more sensitive to economic incentives.

Aid allocation also seems to be linked to donor type. For instance, Neumayer (2003) found an important difference in aid allocation between UN agencies and regional development banks in that the latter tend to rely more on economic need (measured by GDP per capita) as a criterion for aid allocation whereas UN agencies also tend to incorporate the quality of life as a condition for aid allocation.

Also from the perspective of donors, Shweinberger and Lahiri (2006) develop a theoretical model of donor countries behaviour, and make a distinction between private and public aid. In the same line of thought, Tingley (2010) attempts to understand the role of domestic political variables in determining aid effort. He finds that more economically conservative governments tended to allocate less aid.

Ali and Isse (2006) find that taxes on trade have a significant impact on foreign aid receipts, and conclude that 'fiscal distortions increase country's dependency on foreign aid'. Among other significant determinants of aid, the authors find that higher GDP per worker, higher trade levels and higher levels of human capital imply lower levels of foreign aid suggesting that more developed countries are less dependent on foreign aid. Greater

ethnic diversity seems to be positively correlated with aid, and so is the relationship between government expenditures and aid. In addition, size does matter since larger countries seem to receive less aid and finally, the relationship between aid and foreign direct investment (FDI) is negative, suggesting a crowding out effect.

Chong and Gradstein (2008) examine the determinants of foreign aid from the perspective of the individual willingness to provide foreign aid (hypothetical level) and from the perspective of actual donor country data. Using a probit model, they find that the respondents' tendency to agree on higher levels of aid being attributed to poorer countries increased with income, and with higher satisfaction from own government performance. Other explanatory variables were also included such as gender and education. Concerning the actual aid payments, evidence from the model shows that richer and more egalitarian countries are more likely to give aid, whereas own government efficiency has a negative impact on amounts of attributed aid. However, the interesting finding is that recipient country corruption levels do not seem to affect foreign aid. Interestingly also, the number of donors is inversely related to the amount of aid, suggesting a free riding behaviour among donors.

Beyond the causal relationships some authors have attempted to provide a comprehensive theoretical framework for modelling ODA allocation (Cingranelli and Pasquarello, 1985 and Neumayer, 2003). These models identify two stages in ODA allocation decisions. The first stage, also called the 'gatekeeping' stage, is a screening phase where the donors determine the pool of eligible states. The second stage, called the 'level' stage where the actual amount of aid is determined. In this context, Gomez (2007) studied the impact of the cold war system on aid allocation for the 1980-1989 period considering 8 major aid donors and 72 recipients. He finds that human rights seem to be an important factor at the gatekeeping level; however, they do not have a

significant impact on the amount of aid at the level stage. Balla and Reinhardt (2008) find that donor countries condition aid on conflict (at the gatekeeping stage), however, controlling for several development, economic and political variables, the authors find that donors tend to reduce aid to countries with or bordering conflict (at the level stage). Therefore, political considerations and conflict seem to play an important role in aid allocation.

In this perspective, Findley, Powell and Strandow (2011) use georeferenced data for foreign aid projects targeting Angola, Mozambique and Sierra Leone, they find that conflict is concentrated in locations where fungible aid has been granted, with fungibility of aid defined as its 'potential to be diverted for purposes other than those intended by its donor'.

In the field of post-conflict intervention, research has shown that OECD countries respond to conflict situations, and increase their aid in the aftermath of conflicts. In addition, conflict characteristics are an important determinant of aid, and so are the national attributes of the receiving country. Furthermore, aid tends to peak after a conflict before levelling off (Kang and Meernik, 2004).

In the previous section, the determinants of aid were investigated in literature; the objective was to understand what were the factors affecting ODA transfers from a donor to a recipient. However, the causality is also worth examining in the reverse direction, i.e. it is important to understand how aid affects other variables, especially in terms of economic development. This is what the next section will deal with.

2.2. ODA as an independent variable:

In a seminal paper, Burnside and Dollar (2000) examine the impact on aid on economic growth and conclude that 'aid has a positive impact on growth in developing countries with good fiscal, monetary, and trade policies but has little effect in the

presence of poor policies'. This paper was used as a basis by policymakers and multilateral agencies in order to justify aid transfers (Easterly, 2003).[39]

As mentioned before, the purpose of aid is development-oriented; therefore it is natural that some studies have attempted to examine the impact of aid on economic growth, especially when it comes to developing countries. The results concerning the impact of aid on growth were found to be mixed depending whether the model was estimated for different time periods of for different regions (Ekanayake and Chatrna, 2010). These results are contradicted by Minoiu and Reddy (2010) who find a positive relationship between aid and growth in the long run.

Other analyses examine the relationship between aid and governance and find a negative relationship between the two variables, with aid having a negative impact on governance (Busse and Gröning, 2009).

Moe (2008) develops a model of ODA as a determinant of human and educational development in eight selected Southeast Asian medium development level economies. ODA appears to have a positive impact on human development (measured by the Human Development Index) of recipient countries, alongside with other factors such as gross domestic product and foreign direct investment.

Selaya and Sunesen (2012) examine the relationship between flows of FDI and aid. Both are sources of foreign capital for recipient countries, therefore it is relevant to examine the potential complementarities or competition between both flows of funds. The authors find that 'the composition of foreign aid matters' and recommend investing aid in complementary inputs

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[39] However, this view was later on challenged by Easterly in the same paper (2003).

since these investments seem to encourage aid flows, whereas direct investment of aid in infrastructure has a crowding out effect on FDI. In the same line of research, Bhavan, Xu and Zhong (2011) find a complementary relationship between FDI and aid in selected South Asian countries.

Aid has also been linked to real exchange rate overvaluation, especially in post-conflict countries. (Elbadawi, Kaltani and Schmidt, 2008).

Nasir, Rehman and Orakzai (2012) examine the nexus between aid and war on terror. In the short run, aid does not seem to have an impact on the number of terrorist incidents; however, the relationship was positive and significant in the long run. The authors considered that the reason behind this result was the conditionality and the direction of aid targeting military assistance and was perceived by the insurgents as reward for the government for logistic support to the US and allied forces thereby bringing on retaliation.

Some authors have attempted to examine the impact of foreign aid on conflict occurrence. Taking data for Sub-Saharan Africa, Ree and Nillsen (2009) find that increasing aid flows tend to decrease civil conflict duration. Collier and Hoeffler (2007) find diametrically opposite results.

3. METHODOLOGY

This section now presents a model of the determinants of the flows of Official Development Assistance to Lebanon between 1970 till 2010, inclusive of the 1975-1990 civil war episodes. ODA is taken as dependent variable, and it is regressed against a set of independent variables (table 10.1). The independent variables can be classified into two main categories:

- The economic variables, which are an indicator of the level of socio-economic development and well-being of the country: GDP per capita, government expenditure, saving rate and openness to international trade.

- The institutional/political environment variable, which include measures of the occurrence of armed conflict.

Table 10.1 provides a description of the data.

Dependent variable: Official Development Assistance.		Symbol	Figure	Source
Total ODA per capita (in constant 2011 USD)	.1	ODA/c	*Fig. 1*	*OECD and PWT for population data, author's calculations*
Independent variables:				
Real GDP per capita (constant 2005 USD)	.2	GDP/c	*Fig. 2*	*PWT[40]*
Government Consumption Share of GDP Per Capita (2005 constant prices)	.3	G	*Fig. 3*	*PWT*
Saving rate or investment Share of PPP converted GDP Per Capita (2005 constant prices)	.4	S	*Fig. 4*	*PWT*
Openness	.5	OPEN	*Fig. 5*	*PWT*
Occurrence of armed conflict (0 for no and 1 for yes)	.6	WAR	*Fig. 6*	

Table 10.1. The model's variables

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[40] Penn World Tables, https://pwt.sas.upenn.edu.

3.1. Descriptive statistics: a quick look at the evolution of the model's variables between 1970 and 2010 and the rationale behind them

Before analyzing causal relationships, a quick look at the evolution of each of the above mentioned variables allows us to highlight interesting facts. Concerning the amount of aid per capita (calculated by dividing total aid by population size), it peaks at the beginning of the eighties, and then in the mid-2000 years (post-war era). The latter could be explained by the occurrence of the 2006 war of Israel on Lebanon and the 2007 Nahr El Bared events. Overall, the evolution is rather erratic even if an overall upward trend can be traced.

GDP per capita follows an erratic movement that is largely explained by the occurrence of armed conflict, plunging in the mid-eighties then witnessing a more or less sustained growth in the post-conflict period (starting 1990).

Government consumption share of GDP per capita, a proxy of government expenditures, peaks in the early eighties, however it maintains itself at a relatively steady ratio in the post-war era. This could be explained by higher levels of fiscal discipline, but could also be attributed to tightness of public budgets and the need to remedy the ever-growing public debt.

The investment share of GDP per capita is used as a variable to proxy the saving rate in the economy. Since savings are the major determinants of investment, classical growth model (Solow type) have proven that a higher saving rate leads to higher levels of income per capita. Therefore, the saving rate represents a measure of the resilience of the economy and its capacity to generate new investments that will pull the economy forward. A closer look at figure 10.4 shows that the saving rate had a tendency to increase even after the start of conflict, however it has been constantly decreasing until the beginning of the new

millennium. Several explanations can be developed. The initial increase could be attributed to a more risk-averse behaviour on behalf of consumers because of the need to hold back consumption in periods for armed conflict in prevention of an unstable environment both politically and economically. This environment is reflected in the parallel decreasing trend of GDP per capita over the same period. In the beginning of the nineties however, the trend was reversed, which could be attributed to the advent of the "peace period" but also to the fact that the economy was left vulnerable after the end of conflict, resulting in a lower propensity to save. Since the year 2000, this rate has tended to stabilise.

Openness is defined as exports plus imports over GDP. This ratio measures the extent to which a country is open for international commercial and financial transactions and is an indicator of the integration of the country in the world economy. Openness was on an increasing trend up till the end of the war, however it plummeted right afterwards but seems to be on an upward trend again.

When it comes to accounting for armed conflict in the model, a qualitative variable was used. It takes the value of 1 in periods of armed conflict and zero in periods of peace. The variable was assigned the value of 1 for periods ranging between 1975 and 1990 and also for years 2006, 2007 and 2008 (Israel war; Nahr El Bared events).
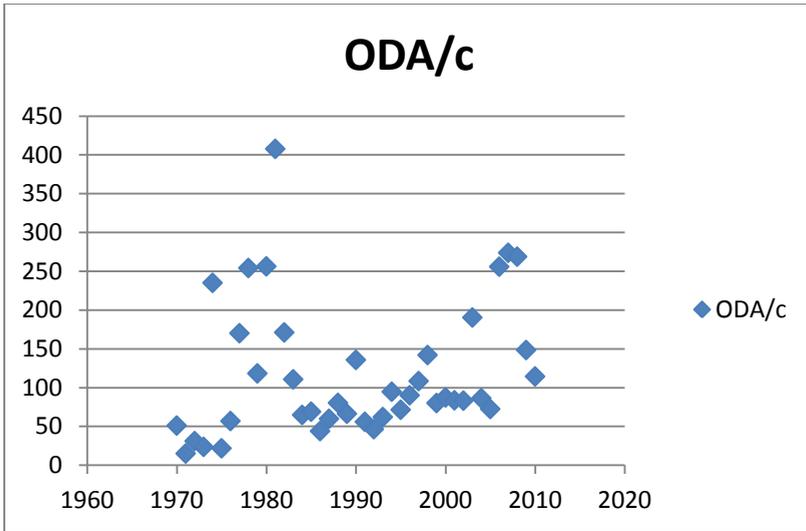
Figure 10.1. Total ODA per capita (in constant 2011 USD)
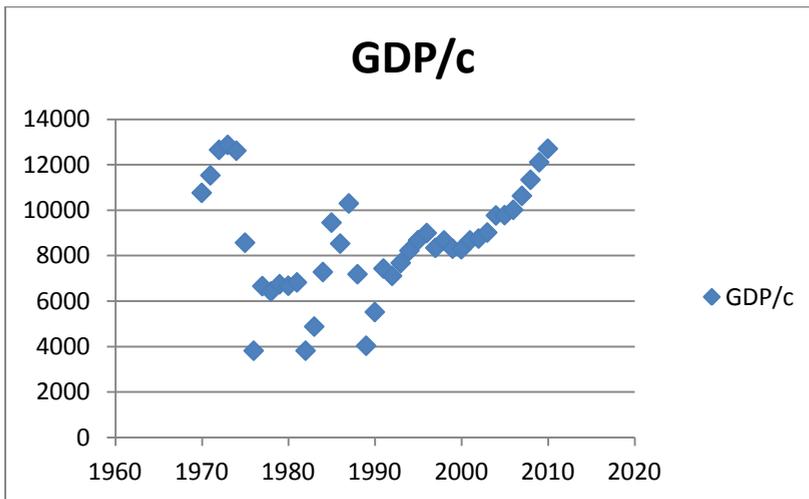
Figure 10.2. Real GDP per capita (constant 2005 USD)
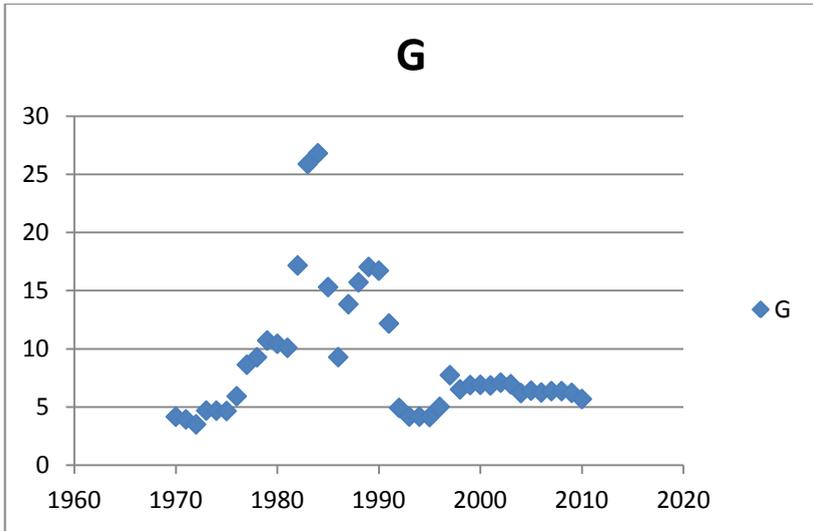
Figure 10.3. Government Consumption Share of GDP Per Capita (2005 constant prices)
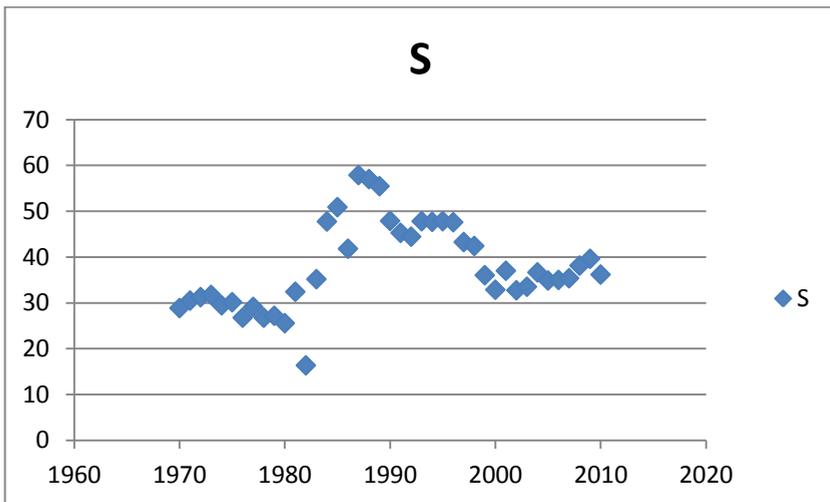
Figure 10.4. Saving rate or investment Share of GDP Per Capita (2005 constant prices)
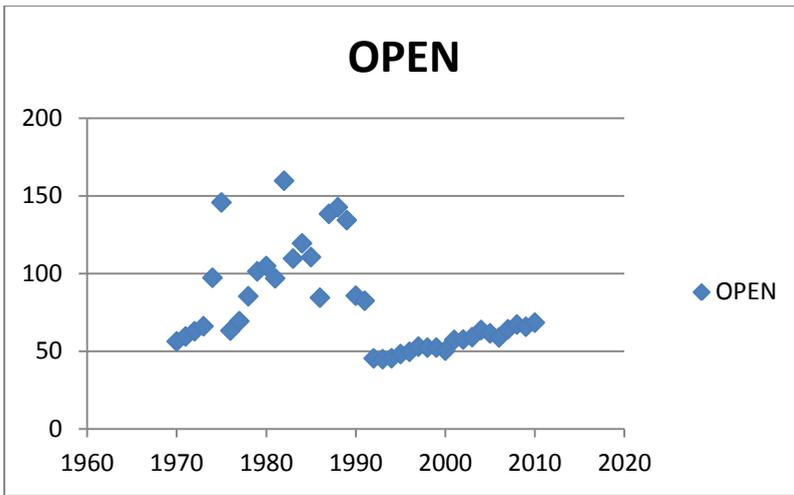
Figure 10.5. Openness
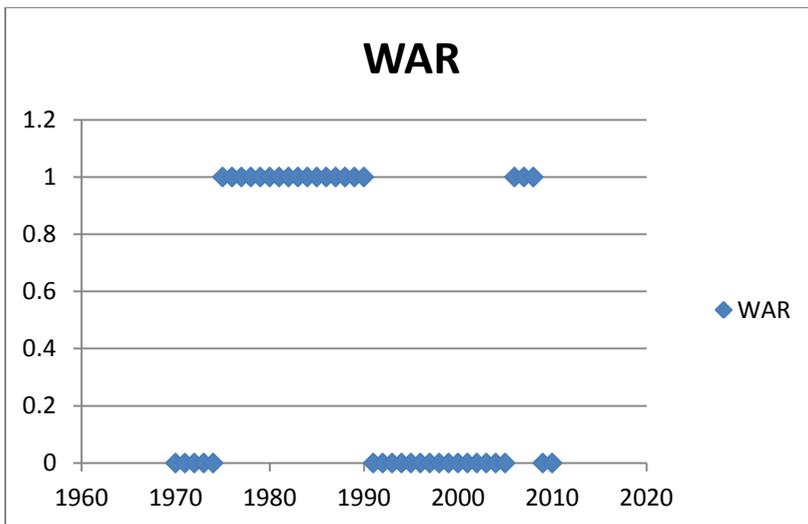
Figure 10.6. Occurrence of armed conflict (0 for no and 1 for yes)

3.2. Regression analysis

Before performing regression analysis, the Augmented Dickey Fuller test was used in order to detect the existence of unit root.

All variables except ODA/c and WAR need to be taken at the first difference.

As mentioned previously, a regression analysis was conducted in order to assess whether GDP per capita, the saving rate, government expenditures, openness and war have an impact on aid receipts by Lebanon during the 1970 and 2010 period. The following equation has been tested:

$$ODA/c_t = \beta_1 + \beta_2 GDP/c_t + \beta_3 G_t + \beta_4 S_t + \beta_5 OPEN_t + \beta_6 WAR_t + \varepsilon_t$$

Where variables are defined in table 10.1. In addition t is the subscript for time, and ε represents the residual. The βs are the coefficients of the independent variables in the equation. Their sign indicates the direction of the causality between each of the independent variables and the dependent variable. Table 10.2 presents the results of the regression. Overall, only 20% of the variations in foreign aid per capita are explained by the independent variables. Concerning the significant variables, only GDP per capita and WAR are significant (at 10% and 5% levels respectively) with positive signs. This means that a higher level of GDP per capita induced higher aid inflows. This is logical since aid needs to be related to the economic size of the country in order to be efficient. The coefficient of the WAR variable is also positive, implying that aid per capita is significantly higher in periods of war, and therefore war seems to be an important determinant of aid allocation in Lebanon. The only negative coefficient in this regression is the saving coefficient implying that a higher saving rate results in lower aid being allocated. This could be explained by the fact that a higher saving rate implies a population with more "reserves" set aside and therefore more resilient to internal and external shocks and in less need for external aid. However, this result needs to be taken with caution as the coefficient is not significant.

Dependent Variable: ODA_C				
Method: Least Squares				
Sample (adjusted): 1971 2010				
Included observations: 40 after adjustments				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	85.14295	18.66507	4.561620	0.0001
D(GDP_C)	0.017019	0.010033	1.696284	0.0990
D(G)	4.209483	4.536399	0.927935	0.3600
D(OPEN)	0.211820	0.546560	0.387552	0.7008
D(S)	-3.371612	2.688320	-1.254171	0.2183
WAR	73.02390	27.93704	2.613874	0.0132
R-squared	0.209269	Mean dependent var		120.2628
Adjusted R-squared	0.092985	S.D. dependent var		87.06667
S.E. of regression	82.91999	Akaike info criterion		11.81111
Sum squared resid	233774.6	Schwarz criterion		12.06444
Log likelihood	-230.2222	F-statistic		1.799634
Durbin-Watson stat	1.482227	Prob(F-statistic)		0.139329

Table 10.2. Regression results

4.   CONCLUSION

This paper attempted to investigate the determinants of foreign aid flows received by Lebanon between 1970 and 2010. It was found that only GDP per capita and armed conflict affect ODA per capita flows. GDP per capita is an important explanatory variable as it encompasses the level of economic development and serves as a proxy of the level of well-being in the country. A higher level of GDP per capita implies that higher ODA flows are needed in order to make a tangible impact. However, since correlation does not imply causation, it might be interesting to investigate the

reverse causality. Concerning armed conflict, it seems to be a major determinant of ODA flows, which reinforces the idea that ODA is politically motivated. the model's overall goodness of fit remains low (R^2=.20) and the model could be improved by adding independent variables, however there are major data limitations in the case of Lebanon, especially for such a long period of time.

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CHAPTER 11

CAN INTERNATIONAL AID CONTRIBUTE TO RESILIENCE?

Perceptions of Aid Effectiveness Following the 2007 Nahr el Bared Crisis

Aseel Takshe, Irna van der Molen and Jon C. Lovett

Abstract: As the final empirical contribution to this book, this Chapter 11 adds to the insights developed in Chapter 10 on how international policy and politics shape, either positively or negatively, resilience to the environmental dangers posed by armed conflict. Building on the preceding chapter, we further scrutinize the assumption that development aid depends on socio-economic, rather than political, considerations. We find that overseas development aid per capita in Lebanon is positively linked to not merely GDP, but also to the occurrence of armed conflict. This highlights the importance of political factors in aid allocation. Thus, it could be suggested, conflict itself generates the aid that can contribute to the resilience that is needed to minimize the effects of the conflict. Exploring this thesis, the chapter offers an in-depth examination of the motivations that drive aid allocation and absorption and, as such, impact resilience. In particular, we explore how the idea, and the practical interpretation and implementation, of a social contract determine the effect of international aid and hence the contribution such aid might make to a country's resilience to conflict-generated environmental hazards.

Keywords: International aid, resilience, Nahr el Bared, social contract

1. INTRODUCTION

Effectiveness of aid is related to the concept of the social contract as a mediating factor between society, state and donor organization (Organisation for Economic Co-operation and Development (OECD), 2008). However, in the past three decades, the nature of this contract has been questioned and benefits of international aid have been under scrutiny (e.g. Epstein, 2011; De Renzio, 2007; Awokuse, 2010). Policy makers, aid practioners, and scholars have questioned the effectiveness of development aid in alleviating poverty, decreasing conflicts, and promoting environmental and social development (Adam and O'Connell, 1999; Burnside and Dollar, 1997, 1998 and 2000; Easterly, 2001). The work of Burnside and Dollar (1997, 1998 and 2000) has been particularly influential. They argue that aid is effective, *but only* in an appropriate macro-economic policy environment. An alternative analysis is proposed by Hansen and Tarp (2010), who conclude that it is the investment and aggregated savings component of aid that has a strong effect on development, and that this is not dependent on the policy context as suggested by Burnside and Dollar. The relation between aid and growth, between aid and governance, and between aid and human development are further touched upon by Roula Al Daia (this book). In her review, she refers to both positive and negative relations between aid and specific manifestations of development (such as growth, governance, human development), sometimes under particular conditions.

Regardless the mixed results on the effectiveness of aid, there is often a widespread and persistent perception of aid *ineffectiveness* that has challenged both aid agency officials and scholars. In this paper, we explore perceived (in)effectiveness of aid at the level of intervention by examining perceptions amongst staff of donor organizations, intergovernmental organizations, and recipients in North Lebanon. Opinions of what is considered

successful or effective (or not), may differ between actors. Delivery of services or infrastructure (re)construction, such as urgent post-conflict repair of a bridge, road or electricity, may be considered effective by the donor and the state, but local actors might perceive it ineffective or unsuccessful.

The research for this chapter is conducted in North Lebanon near the Nahr El Bared Camp (NBC). The camp has been the scene of violent conflict. In 2007 clashes between the Lebanese army and Palestinian jihadists of Fatah al-Islam killed 400 people. In 2008 US $277 million was pledged for reconstruction of the NBC and surrounding region, an amount rising to the $328 million in May 2009. A wide range of actors are involved in delivering reconstruction activities. These not only include donors, the state and local municipalities; but also private companies, non-governmental organizations (NGOs), international organizations and civil society.

Aid interventions for reconstruction after armed conflict are usually complicated by strongly polarized international political stances; and in this respect are quite different to donor assistance following natural disasters. We explore the perceptions among, between and across multiple stakeholders, recipients as well as donors, to assess effectiveness of aid to North Lebanon in the aftermath of the clashes at NBC in 2007. We argue that the concept of 'effectiveness' and the conditions necessary for 'effectiveness of aid', have become problematic. Operationalization of 'effectiveness' becomes meaningless if it rests on definitions and conceptualisations that are agreed upon by only one of the multiple stakeholders, usually the donor. We use Q-methodology to extract discourses from donors, UN agencies, and the recipients of aid (municipalities, NGOs, communities, and syndicates).

2. STUDY SITE: NORTH LEBANON

Northern Lebanon and its municipalities suffer from being, on average, the most impoverished region of the country. Moreover, it has the highest 'inter-governorate inequality' in Lebanon (United Nations Development Programme (UNDP), 2009). Tripoli, Minieh-Dinnieh and Akkar are the poorest areas of the region (poverty rates at 63%; Ministry of Social Affairs (MoSA), 2007) in contrast with Batroun and Zgharta which have a relatively low poverty rate. Overall the region has the highest illiteracy rate (29.2%), and one of the largest average family sizes (6 persons in the same household) in the country (MoSA, 2007). According to the Central Administration for Statistics, public school enrollment (60.3% - as compared to 37.2% of youth in private schools) is also higher in North Lebanon than in other areas. As with the adjacent municipalities, level of access to clean water and adequate sewerage and solid waste disposal services rate is among the lowest in Lebanon (MoSA, 2007). Closure of the Syrian border during and after the July 2006 war by Israel and the Nahr el-Bared crisis in 2007 exacerbated the precarious socio-economic situation.

The Nahr El Bared Camp (NBC) was established in 1949 in Northern Lebanon, around 16 km from the city of Tripoli in Akkar governorate. It was established by the League of Red Cross Societies to accommodate Palestinian refugees suffering harsh winter conditions in the Bekaa valley and Tripoli suburbs. The NBC lies 16 km north of the metropolitan city of Tripoli, and covers about 20 km^2. About 31,000 displaced Palestinians[41] and their descendents lived in and around the camp until 2007. Between the months of May and September 2007, clashes erupted between the Lebanese army and Palestinian jihadists of Fatah al-

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[41] Around 52% are women and 48 percent are men. 33% of the camp population is less than 15 years old.

Islam in and around NBC leaving more than 400 people dead, including Lebanese soldiers and civilians, Palestinian jihadists and civilians (Government of Lebanon (GoL), 2008). Subsequently, the situation stabilized and reconstruction of the camp is ongoing, yet it remains fragile and families originating from NBC rely on aid to cope with the necessities of daily life. Both the camp and its surrounding areas also rely on aid for maintenance and improvement of its infrastructure.

In mid-2008, the international community met in Vienna in order to secure funds to implement a recovery and reconstruction strategy for NBC and its surrounding region. Initially, this was set at US $277 million, but this rose to US $328 million[42] (revised budget of May 2009). Most reconstruction activities of NBC were the responsibility of the United Nations Relief and Works Agency for Palestine Refugees in the Near East (UNRWA), whereas the other supporting activities[43] where undertaken by the World Bank, multilateral and bilateral development agencies, as well as international and national NGOs, but all in partnership with the Lebanese Government. The recipients of the donors were 26 municipalities, both those directly surrounding the NBC in what is termed the 'second ring' (Muhammara, Bebnine, Bhanine, Minieh, Beddawi and Deir Amar) and others scattered around the surrounding area and termed the 'third ring'. Project implementation requires cooperation between multiple stakeholders: donors, municipalities, contractors, UNRWA and government authorities. These are not equal partners in the development process and they hold different perceptions on the

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[42] The International Donor Conference for the Recovery and Reconstruction of the Nahr el-Bared Palestinian Refugee Camp and Conflict-Affected Areas of North Lebanon. 2008. A Common Challenge, A Shared Responsibility. Paper presented in the International Donor Conference, Vienna: Austria.

[43] Such as related off-site infrastructure, capacity building and training on community, improving living conditions in the surrounding areas, community development and municipal infrastructure projects, socio-economic programs.

nature, modalities, objectives and effectiveness of aid. The state's role in service delivery or reconstruction has partly been taken over, or is supplemented by private actors (companies such as Solidere, International Bechtel Company, Dar al-Handasa or smaller firms providing water and electricity), NGOs (Hariri Foundation), non-state actors (Hezbollah in the south, and the PLO in refugee camps), international organizations (UNRWA in refugee camps) or civil society.

3. METHODOLOGY

In order to explore 'recipient/intermediaries or donors' perceptions, we used Q-methodology to analyze their discourses in use. For a brief review of the methodology see Takshe et al. (2010). The method combines both qualitative and quantitative techniques to extract discourses in as subjective way as possible by structuring of opinions, judgements and understandings of risk.

The Q-methodology involves several steps, starting with a literature and policy analysis, and face to face interviews to create a concourse of commentary from relevant stakeholders. The stakeholders were identified as municipalities (recipients), non-governmental organizations (NGOs), research centers, United Nations specialized agencies (intermediaries), national and international donors, and ministries. The face-to-face interviews (67 respondents) included open-ended questions. These were:

(1) What are, in your opinion, the strengths and weaknesses of donors' approaches in the region? (2) Are donors effective in deliverance of services? (3)What are the preferences among, within and across groups of actors regarding the response strategies? (4) How can the participation of civil society in future mitigation strategies be enhanced? (5) In your opinion, is the pattern of aid flows dictated in large part by political and

strategic considerations perceived? Face to face interviews were carried out during January–April 2010.

Statements (sometimes quite bold statements) were then prepared from the concourse and a selection of statements was applied to the survey participants to create Q sorts which are analyzed using factor analysis. The answers were transcribed, organized and similar statements grouped together. The secondary sources of statements were books and journals related to conflict resolution, donor strategies, and post conflict international assistance. Statements from secondary sources were extracted during January and April 2010. Between April and June 2010, a total of 246 statements were generated of which 182 statements were from primary sources and 64 statements from secondary sources.

A subset of statements, the Q set, was then drawn from the original concourse to be presented to the participants. Opinions on the optimal number of statements vary. Some authors consider there should be at least 60 statements to produce statistical stability and reliability, or that the typical set should be between 50 and 70 (McKeown and Thomas, 1988; Previte et al., 2007). Barry and Proops consider that 36 statements are sufficient to give meaningful and statistically significant results (Barry and Proops, 1999; Swedeen, 2006). In order to select the final statements to be ranked by the Q-sort participants, three methods were used to ensure that those statements were representative.

First, care was taken to ensure that the selected statements covered all the sub-themes that were introduced by the face-to-face interviews and represent the opinion domain (Watts and Stenner, 2005). Secondly, the selected statements included positive, neutral and negative statements in order that the participants could respond to all points of view. The third and major filter was the 4X4 matrix proposed by Dryzek and

Berejikian (1993). This matrix shown in Table 11.2 is a representation of two categories that are called 'discourse element' and 'type of claim'. Statements were chosen so that all cells are occupied[44].

Type of Claim	Discourse Element			
	Ontology	Agency	Motivation	Relationship
Definitive	11	12	23	23
Designative	10	12	19	19
Evaluative	6	14	21	24
Advocative	4	12	18	14

Table 11.2: Matrix for filtering the statements giving number of statements selected from the concourse corresponding to each of the 16 categories (Dryzek and Berejikian, 1993)

The discourse elements refer to political aspects of discourses as follows:

- Ontology: reflects set of entities such as states, nations, individuals, classes, genes, and interests.

- Agency: reflects various degrees of agency attributed to these entities.

- Motivation: reflects agents' recognized or denied motivation such as self-interest, public-spiritedness, civic virtue, impartiality, and survival.

- Relationships: reflects natural or unnatural political relationships mainly taken for granted such as hierarchies based on age, education, birth, gender, wealth, social class. In this study relations between institutions is also included and not only individual relations.

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[44] Classification in the 4x4 table was double-blind checked with an independent source; results were compared.

The type of claim refers to the classification of claims that can be made, and it is described as follows:

- Definitive: reflects the meaning of terms (definitions).

- Designative: reflects concerning issues of fact.

- Evaluative: reflects expressions of the worth of something that does or could exist.

- Advocative: reflects something that should or should not exist.

For example an *evaluative* statement concerning *motivation* would be statement (15) in Table 11.3. 'There is a strong political agenda dictating how international aid is manipulated in the local Lebanese context. Lebanese political parties systematically use assistance as a mean to sustain their influence''. A designative statement that has to do agency would be statement (1) 'International assistances has a positive echo in the area. It was the first time after the Nahr El Bared Conflict that the international community paid attention to the region'. Each of the 246 original statements was assigned matrix categories. Once the statements had been filtered for duplication, topic coverage, sign and position in the matrix, the final number of statements chosen was 55. These statements are presented in Table 11.2. A Likert scale of nine points was used ranging from -4 (mostly disagree) to +4 (mostly agree).

Statement Ideal factor score A B C		A	B	C
1	International assistance had a positive echo in the area. It was the first time after the Nahr El Bared conflict that the international community paid attention to the region.	**1**	**-2**	**-2**
2	The work of the international agencies is transparent and clean.	**-3**	**-3**	**-3**
3	Currently, the aid agencies are transparent in the implementation and in the way they spend the money. International aid supported local organizations in improving their management qualities. This made the projects more organized, and more accountability on the performance and implementation is given.	**2**	**-4**	**-4**
4	The projects motivated us because they improve our society. Projects outside the conflict period are very useful; it helps to develop the community.	**3**	**-3**	**1**
5	International aid came to build capacity of local organizations. This was good.	**3**	**-2**	**-1**
6	In general, the international assistance has a lot of positive impact. On the economical side, it is useful because international organizations bring money and they spend it in the village, they create jobs.	**3**	**-3**	**-1**
7	The municipality is here, but they cannot do anything without help from outside. We need all the help we can get and we are grateful for your support.	**1**	**1**	**1**
8	Humanitarian aid really helps the people. It relieves some of the pressure from conflict in the time before recovery happens.	**2**	**-2**	**1**
9	Aid is not primarily delivered as a genuine response to people's needs, but much rather follows an 'agenda' that distinctly favors or discriminates against certain individuals and groups.	**4**	**0**	**0**
10	International aid is part of a local conspiracy.	**4**	**4**	**3**
11	There is a lack of honesty, integrity and fairness in international assistance, and is dominated by opportunistic behavior at the decision-making and the implementing levels.	**4**	**-1**	**1**
12	Aid should be delivered only by people with a conscience to treat people equally.	**1**	**4**	**-3**

13	Most of the aid coming to Lebanon is stolen.	3	1	4
14	Organizations should work with members who have clean hands.	4	4	0
15	There is a strong political agenda dictating how international aid is manipulated in the local Lebanese context. Lebanese political parties systematically use assistance as a means to sustain their influence.	-3	0	3
16	To increase their influence, political parties try to take control of aid distributions.	-2	0	2
17	Half of the international assistance was stolen by the government.	4	-3	-3
18	A lot of money that comes to the municipality is being diverted into private pockets.	4	4	2
19	If you don't have 'wasta', you won't get anything.	-3	4	1
20	International organizations should do a better job of assessment to make sure they distribute to those who really need it and not to their friends.	1	2	2
21	International organizations have to be present with their own staff members, to monitor and observe how aid is distributed. If you don't do this, then people will bend to the pressure of their relatives and friends whom they owe a favor or wish to have something in return.	0	-2	2
22	NGOs should not be responsible for development; the government is responsible. But the way NGOs operate, they circumvent the state. NGOs can have a supporting role, but should not be central.	-1	2	-2
23	The good thing about the Nahr al-Bared crisis is that it brought direct contact between the small local NGOs and the donors. Before the war, we could not reach the donors. Now we have direct channels.	-1	-1	-2
24	There is not enough funding for local NGOs, so the international NGOs play the local NGOs against each other – to outbid each other.	-2	-3	-2
25	Donors do a lot of assessments and focus groups, but then when what comes out of these focus groups doesn't fit their agenda, they simply change it to make it fit. There is no real partnership between international donors and local NGOs.	-3	3	-1
26	Of all donors, definitely USAID has a political agenda.	-2	3	0

27	Conflict resolution concepts don't work in Lebanon—it's not about two people not liking each other, you need a political solution. Aid money for preventing violence is promoting a false reality.	0	1	-4
28	It's the weakness of the state that makes other agencies powerful.	4	2	3
29	There is a huge issue of not trusting local staff; they have limitations in speaking out.	-3	-1	-3
30	Organizations spend far too much time and money on administration. Especially UN agencies are very heavy and bureaucratic.	2	4	4
31	There is a need for donor coordination; we see all these redundancies and the chaos. There seems to be no vision, no long-term idea.	2	4	4
32	As long as there is no comprehensive assessment or study of need you won't understand whether there has been progress	3	3	3
33	The international organizations come and do all these studies. We spend a lot of time with them, they ask a lot of questions and we need to give them a lot of information. Then they leave and we never hear back from them.	0	1	1
34	Once a project is done, there is no follow-up, no maintenance.	1	0	3
35	The international organizations parachuted in, left, and declared success.	-2	2	2
36	No country has ever developed because of aid.	-1	2	-4
37	Lack of regulation, legislation and transparency can lead to profiteering and mismanagement, both within government institutions and providers of infrastructure.	4	2	2
38	Lack of regulation means that transparency and accountability are reduced	4	1	0
39	The North of Lebanon is in a chronic need for continuous foreign aid as a result of failures of the economic policies conducted in the immediate era of the postwar reconstruction phase.	1	0	3
40	The hallmarks of corruption, cronyism, and critically ineffective service delivery—remain embedded in the fabric of government	2	1	4

41	Aid is accompanied by conditionality.	-2	-2	1
42	Donors may attach goal attainment criteria on countries such that if they do not meet donor expectations, targets or goals, aid will be reduced or terminated.	1	0	-1
43	Donor politics, methods and foreign policy goals led them to impose aid programs	1	0	0
44	Data gathering and reporting requirements are burdensome for Lebanon.	2	-2	4
45	Donors often managed projects themselves without the assistance of local expertise	-2	-1	-1
46	Donors did not always implement aid projects effectively.	0	1	0
47	Donors had a tendency to push projects to demonstrate immediate results	-1	2	3
48	Donors may duplicate one another's programs and leave gaps in other areas.	0	1	4
49	The international community interest in maintaining calm and peace in Lebanon follows different agendas	0	3	1
50	There is discrepancy and asymmetry in the relationship between donors and recipients	4	1	1
51	Initiatives that the international community undertook were to encourage additional reform	3	-4	-3
52	Municipalities surrounding the camp were the most affected development wise	-1	-3	-2
53	Recipients are limited by the information they have and given	4	-1	0
54	There should be trust between donors and recipients when it comes to project execution	3	3	2
55	Recipients should be trained in order to be able to follow up on projects after donors leave	4	4	4

Table 11.2: Final selection of statements and scoring

3.1. Respondents

A Q-methodological study requires only a limited number of respondents, known as P set (Brown, 1980). This P set usually is smaller than the Q sample (also called as Q set or Q statements) (Eden, Donaldson and Walker, 2005). Barry and Proops showed that only 12 participants responding to 36 statements are sufficient to present statistically valid results (Barry and Proops, 1999, Eden, Donaldson and Walker, 2005). The key requirement here is that the respondents represent a cross section of the stakeholders. Q participants were selected based on two methods. The participants were, first, selected based on their contribution to the original concourse.

Category of Stakeholders	Nr. of Participants Interviews	Nr. Participants (Q- sorts)
Recipients (Municipalities, Syndicates)	27	19
Intermediaries (UN Agencies)	15	8
Donors (International and National)	20	9
Non-Governmental Organizations	5	3
Focus- Group Discussions[45]	n.a.	
Total	**67**	**38**

Table 11.1: Respondents from different categories of stakeholders.

During the first round of interviews, some respondents were more informed about the concourse and based on their familiarity of the

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[45] A homogeneous group. Most of them were male residents of Nahr El Bared Camp who returned to the (new) camp. Most of the focus groups were composed of men only. This was due to the culture of the camp and usually women do not speak with strangers. It was the men who approached the researcher to enquire what they were doing and what kind of information was being sought. When they were informed about the research they started volunteering information and calling others to come and have a chat.

topic they were re selected again for the Q sort conducting. The second method was through snowball sampling. We started with a key informant and asked them to recommend other useful participants. A total of 38 participants completed the Q- sort.

3.2. The Q-Sort process

Respondents were asked to sort 55 statements. The Q process was explained at the beginning of each sort and the participants were briefed as to what the researcher was hoping to learn. The researcher emphasized the interest in knowing the personal perspective of the respondent and not the official perspective of the organization they work for. The statements were presented on cards. Respondents had to sort these into a number of categories, representing the degree to which they reflect or deviate from their own standards, opinions, views or experiences. During the interview, the interviewer prompted respondents to account for their choice of sorting statements.

The completed distribution is called a Q-sort. The validity of the Q-sample was checked by asking each respondent, at the end of the interview, about omissions and biases. Participants score each statement according to how strongly they agree or disagree with it. A Likert scale of nine points was used ranging from -4 (mostly disagree) to +4 (mostly agree). We used a nine-point scale rather than an 11 or 13 point scale in order not to confuse the participants with a long scale. An odd number forces a definite agreement/disagreement with the statement. Some respondents, especially recipients, tended to score most of the statements the same because they had strong feelings about the situation as a whole. In order to counter this tendency we emphasized that they need to rank the statements relative to each other; and even though there might be a lot of statements that they feel strongly about, they should prioritize them, other wise we will

have to use forced distribution[46]. The respondents all compiled with these instructions. Some respondents discussed each Q statement. These comments provided important contextual information for interpreting results of the Q analysis.

3.3. Factor Analysis

Factor analysis is a mathematical technique that reveals underlying explanations for patterns in a large set of data. In the case of Q method the factor analysis looks for patterns among the Q sorts. The analysis produces a number of "factors," representing groups of persons with similar (statistically correlated) Q-sorts. The outcome of a Q-factor analysis is a number of clusters of persons that obviously share a perspective or vision. For this study, factor analysis was done by using PQMethod software. There is a choice of two factor analysis algorithms a) Centroid and b) Principal Components Analysis (PCA). In our experience with Q studies of different topics PCA and Centroid both tend to give fairly similar results (Frantzi et al., 2009; Takshe et al., 2010).

There are two main criteria upon which selection of factors depend. The first one is the Kaiser criterion (Yeomans, 1982) that the eigenvalues of the factor should be ≥ 1. The second criterion is that a minimum of two Q-sorts load significantly on that factor (Brown, 1980; Watts and Stenner, 2005). A significant factor loading is calculated by using the equation $2.58(1\sqrt{N})$, where N equals the number of statements used, and this would be at a significance level of $P<0.01$ (Brown, 1980). In this case a

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[46] In a forced distribution the respondent has to fill in all the ranks of the Likert Scale with a fixed number for each rank i.e. they are only allowed a certain number of statements to be scored (-4), a certain number to be scored (-3), and so on. Other studies indicate that a forced distribution is not considered to give different results from a free distribution and is not required by the statistical analysis (Barry and Proops, 1999; Block, 1956; Cottle and McKeown, 1981; Frantzi et al., 2009; McKeown andThomas, 1988; Watts and Stenner, 2005).

significant factor loading would be equal to or greater than 2.58(1√55) ≥ ± 0.35 (Brown, 1980). The factors extracted are considered to be the 'ideal Q-sorts' around which all the closest Q-sorts are gathered. The resulting factors represent common patterns of responses across the participants and describe the discourses to which the participants contribute.

According to those two main criteria, in addition to some other minor tests (such as a Scree Test; Figure 11.1)[47] and the judgment of the researcher based on additional information from the Q interviews, there were three factors extracted.
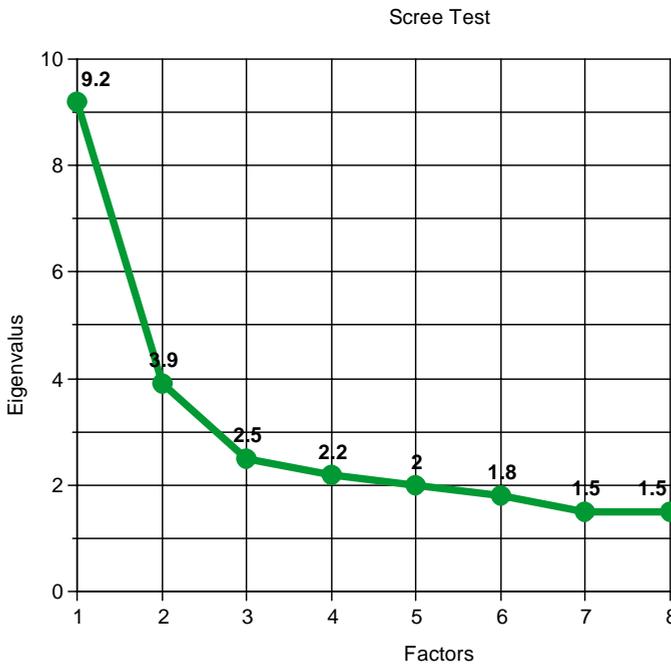

Figure 11.1. Scree Test

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[47] Cattell (1966) suggests finding the point where the smooth decrease of eigenvalues levels off to the right of the graph. According to this criterion, we would retain 3 factors in our study.

The analysis revealed three discourses (designated A, B and C) with an eigenvalue greater than 1.0 and with at least two participants loading significantly on them (Table 11.2). Each discourse is the interpretation of a specific factor extracted by the statistical procedure. Discourses are interpreted by using statements statistically significant at the 99% confidence level (P < 0.01), followed by those significant at the 95% confidence level (P < 0.05). The three discourses are further explained in section 4.2; 4.3 and 4.4, and are:

- Discourse A: critical of the way in which international aid is organized;
- Discourse B: the good governance discourse applied to recipients and donors alike;
- Discourse C: problems arising from donor-recipient relations.

According to Webler et al. (2009), the factor analysis also gives distinguishing statements, which are defined as ''those that were ranked significantly differently between a given factor and all other factors'' (Webler et al., 2009). Moreover the Q-method will generate a list of consensus statements in which there are no significant differences in the factors.[48]

3.3.1. *Factor correlations and number of sorts loading on each factor*

Table 11.4 shows factor correlations and number of sorts loading on each factor. Although it is considered an advantage in Q method to work with a small sample, this does not mean that stakeholder group loadings on a specific discourse are conclusive. Statistical certainty cannot demonstrate in Q that certain groups of

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[48] The selection is also influenced by both the face-to-face interviews and on the discussion with the participants after they have filled in the Q-sorts. Although there might be some bias, but it has been reduced by careful selection of the Q- statements that have generated from the participants.

people load significantly on specific factors. The statistical significance observed in Q is based on patterns of statement rankings of which the sample size is obviously very large (Ockwell, 2008). To be able to get statistical significance in relation to which stakeholder groups load on which discourse would require large numbers of respondents from each group. Until this is done, the general picture of which groups tend to load on which discourse must be treated merely as a working hypothesis (Ockwell, 2008).

Factor	A	B	C	% of variance explained	# of coefficients ≥ 0.35
A	1.00	0.37	0.20	15	15
B	0.37	1.00	0.39	12	9
C	0.19	0.40	1.00	8	6

Table 11.4: Correlation matrix between factors and number of sorts loading on each factor. Correlations are from 0 (no correlation) to 1 (complete correlation).

4. RESULTS

4.1. Areas of Consensus and Disagreement

Statements that present consensus among the participants are statements 7, 20, 28, 30, 31, 32, 37, and 40. All the interviewees agree that although the municipalities are present, but they cannot do anything without help from outside; they need all the help (technical assistance, humanitarian assistance, provision of sanitation, etc.) they can get and are grateful for the support (7). International organizations should do a better job of assessment to make sure they distribute to those who really need it and not to their friends (20) and that those organizations spend too much time and money on administration, especially the UN agencies which are bureaucratic (30). The interviewees seem to have a common understanding that there is a need for donor

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coordination, because there are redundancies, chaos, lack of vision and long-term ideas (31). At the same time there is no comprehensive assessment or study of need, which leads to a misunderstanding when assessing the progress levels (32). It is the weakness of the state that makes other agencies powerful (28) and the lack of regulation, legislation and transparency can lead to profiteering and mismanagement, both within government institutions and providers (37) which in turn highlight the theme of corruption, cronyism and inefficient service delivery that are considered embedded in the fabric of the government (40).

All discourses represent disagreement with statements 2, 7, 23, 24 and 29. Everyone disagreed that the work of the international agencies is transparent and clean (2). No one seemed to agree about what was said regarding the relationship between the small local NGOs and donors, that the Nahr El Bared crises brought direct contact between the small local NGOs and donors; and that before the war they were not able to reach the donors whereas now they have direct channels (23) Furthermore, they disagree that the local NGOs lack funding hence the international NGOs play them against each other in order to outbid each other (24). Finally all discourses disagree that there is a huge issue of not trusting local staff and that they have limitations on speaking out (29).

Some statements are considered important, such is statement 15, which reads that there is a strong political agenda dictating how international aid is manipulated in the local Lebanese context and that Lebanese political parties systematically use assistance as means to sustain their influence. This statement is considered important because the other factors ranked it highly. Other statements which had scoring varying between -2,-1, 1, and 2 with a zero included show that the import of this statement is low across the discourses because opinions about it are not strong and they either mildly agree or mildly disagree.

It is evident from all the discourses that there is no trust in the Government and there is a fear that not all money is being distributed fairly amongst those who needed it the most. The work of international organizations has not been seen as effective and productive, and many interviewees think their presence is a waste of time and an invasion of independence in Lebanon. Yet, at the same time, all respondents indicated that municipalities could not do anything without support from the outside. Many of those who were interviewed (especially recipients) considered that the presence of donors is to benefit the international agenda and not to benefit Lebanon, i.e. most of the European countries want to be in Lebanon to ensure the stability of the country in order to make sure that Israel would be safe and Lebanon would be busy solving its internal issues. Moreover they consider Lebanon as a gateway of the Middle East, so it is important to have safety and stability in the country. Recipients felt that the agenda of donors did not match their own agendas. Nepotism (*wasta*) is considered to influence any developmental or aid action, and the most impoverished population in northern Lebanon was not reached. Recipients assume that the Government sends donors to work in the rich villages only, because they have a stronger connection with the state.

Several interviewees said that if donors want to work on preventing future sectarian violence they can best focus on decreasing socio-economic inequality between different sects in Lebanon, by adhering to a positive discrimination policy for the most deprived populations in Lebanon. Moreover, it was considered that the most deprived areas in northern Lebanon are the Muslim Sunni areas (Fatah el Islam is a Sunni Party), who are falling into the hands of extremist groups, especially in Tripoli, Dinnieh and Akkar (providing low-educated, unemployed young men with weapons and $300 a month, to be loyal to more extremist groups and ready to fight). The Sunni leaders are, in that

way, 'benefiting' from the relative deprivation in this area. Most of the Christian villages are in Akkar seem to be in better condition than the Sunni villages, due to their higher level of income and the higher educational level.[49]

Moreover there is a clear agreement that administrative corruption is a challenge nationally and even more so in an impoverished area such as the North. In the absence of an efficient monitoring mechanism, money for the development of the North does not always reach its intended destination. One can observe skepticism and bitterness among the population on account of organizations having previously performed surveys and then never returning with any tangible aid.

It is interesting to highlight here that several statements show similarity with good governance. We see that there is a concern of good governance by both donors and recipients[50]. Examples of statements related to good governance are 5, 6, 12, and 15. Moreover, several statements are concerned with both performance and process legitimacy. Statements related to performance legitimacy for example are 4, 7, 10 and 11. Where as statements related to the process legitimacy are 2, 3, 9, 12, and 16.

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[49] The higher education level follows from missionaries that established schools in the Christian villages

[50] There is a debate and critic related to good governance. More information on such debate can be found in Poluha, E. and Rosendahl, M. 2002. *Contesting 'good' governance: cross-cultural perspectives on representation, accountability and public space*. New York: Routledge and Agere, S. 2000. *Promoting Good Governance: principles, practices and perspectives*. London: Commonwealth Secretariat.

4.2. Discourse A: critical of the way in which international aid is organized

Discourse A explains 15 percent of the total variance. The distinguishing statements[51] for this discourse are 1,3,5,6,15,16,17, 26, 35, 47 and 51. Statements that people strongly agree with are 9, 10, 11, 14, 17, 18, 28, 37, 38, 50, 53 and 55. In this discourse there are no strongly disagreed upon statements.

This discourse calls for the international community to work only with members who have 'clean hands' (14) and be able to train those members in order to be able to follow up on the projects after donors have left (55). The participants agree in this discourse that state weakness has made donors powerful (28) hence being able to control how programs are executed on the ground without being monitored nor governed by the state, which should be the legitimate umbrella cover for all activities within its areas of control. According to the majority of participants in this discourse the lack of regulation, legislation and transparency can lead to profiteering and mismanagement, both within government institutions and providers (37); moreover transparency and accountability are reduced when there are no regulations for controlling the activities (38). This discourse agrees with the idea that international aid is part of a local conspiracy (10) and that aid is not primarily delivered as a genuine response to people's needs, but rather follows an 'agenda' that distinctly favors or discriminates against certain individuals and groups (9). This might explain why the participants agreed that half of the international assistance was stolen by the government (17) and that the concept of money coming to the municipalities is being diverted into private pockets (18); hence lack of honesty, integrity and fairness in international assistance, and is dominated by

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[51] Those with scores that were significantly different at the $p < 0.05$ and $p < 0.01$ level from the same statement's score on other identified factors.

opportunistic behavior at the decision-making and the implementing levels (11) is a valid idea. The relationship between the recipients and donors does not look good in this discourse, where participants strongly agree that there is discrepancy and asymmetry in the relationship between both sides (50) and that recipients are limited by the information they have and given (53).

4.3. Discourse B: the good governance discourse applied to recipients and donors alike

Discourse B explains 12 percent of the total variance. The statistically distinguishing statements in this discourse are 4, 8, 22, 25, and 36. Strong agreements are present in 10,12,14,18, 19, 30, 31, and 55. Other important statements showing strong disagreements are 3 and 51.

There is an agreement that aid should be delivered only by people with a conscience to treat people equally (12). This discourse critically reflects on the use of nepotism ('wasta') to achieve something (19). The aid organizations should work with members who have clean hands (14) and train the recipients appropriately in order to be able to follow up on projects after the donors left (55). A similar idea was also highlighted in the previous discourse. However, according to the participants, aid organizations spend far too much time and money on administration, especially the UN agencies which are bureaucratic (30). Such a disadvantage calls for more donor coordination, to avoid redundancies in projects and chaos where there is no vision and long-term goal (31). Once again this discourse also raises the idea that international aid is part of a local conspiracy (10) and the money that comes to the municipality is diverted into private pockets.

The discourse reveals disagreement regarding transparency of the aid agencies, and does not consider them transparent in project implementation and in the way they spend money. It does

not consider that international aid supported local organizations to improve their management qualities (3). This discourse did not recognize that initiatives undertaken by the international community were to encourage additional reform (51).

4.4. Discourse C: problems arising from donor-recipient relations

Discourse C explains 8 percent of the total variance. The distinguishing statements for this discourse are 12, 27, and 41. In this discourse the strongly agreed upon statements are 13, 30, 31, 40, 44, 48, and 55 whereas statements that interviewees strongly disagreed with are 3, 27, and 36. Once again, and unsurprisingly, discourse C agrees that most of the aid coming to Lebanon is being stolen (13) and this most probably would be the outcome when the hallmarks of corruption, cronyism and critically ineffective service delivery remain embedded in the fabric of the government (40) according to this discourse. This discourse highlights the internal problems of the donor agencies and their performances. Participants consider that organizations spend far too much time and money on administration, especially bureaucratic UN agencies (30), and there is a need for donor coordination, to avoid redundancies, chaos and to integrate long-term vision and ideas (31). Moreover it emphasizes the perception that donors may duplicate one another's programs and leave gaps in other areas (48). The discourse also highlights a theme that has been mentioned in both of the previous discourses, which is training recipients to be able to follow up on projects after donors leave (55). Currently data gathering and reporting requirements are considered burdensome for Lebanon (44). Similar to discourse A and B, this discourse rejects the idea that the aid agencies are transparent in the implementation and in the way they spend the money (3); and asserts that they have not supported local organizations in improving their management qualities which has left projects unorganized with no accountability on performance

and implementation. This discourse shows the need for international aid and disagrees with the statements that no country has ever developed because of aid (36) and conflict resolution concepts do not work in Lebanon (27).

5. DISCUSSION

The objective of this study was to elucidate discourses on international aid in northern Lebanon after the 2007 clashes in Nahr el Bared Camp. The Q method revealed three discourses.

- Discourse A: critical of the way in which international aid is organized;
- Discourse B: the good governance discourse applied to recipients and donors alike;
- Discourse C: problems arising from donor-recipient relations.

Analysis of the discourses reveals that aid recipients are of the opinion that donors do not understand needs of the region and that their agendas do not match local expectations. In contrast donors do feel embedded in the region, consider they have studied the situation well and that their projects are suitable for the beneficiaries; but that, in their opinion, the problem lies with the beneficiaries having their own agendas. Beneficiaries feel there is information kept from them, where-as donors consider that unreported information is of little benefit to the beneficiaries: they will not understand it and hence there is no need to dwell on it. Underlying the interaction is a basic mistrust between donors and beneficiaries; and there is a perception that beneficiaries are partners in name only and that donors are pursuing a higher political agenda. Donors are worried about handing over projects because they believe that the local partners will not implement the projects. In consequence, although there is a partnership in project proposals, the donors are the main actors in project execution. The

beneficiaries, who in this case are mainly the municipalities, do not have the means, education or knowledge to execute the projects. Donors considered that the priorities of the beneficiaries have already been taken into account through what they consider to be the participatory nature of the projects; and they felt that the projects empower local people to help themselves.

A number of interesting observations can be made. Firstly, there is a mismatch between the *expectations* that recipients have of international assistance and their experience with everyday practice and the system of aid. Several statements indicate contradictions of the desired process, modality and outcome of aid. This reduces the *legitimacy* of international aid, both in terms of process and performance. Secondly, the *capacity* of the municipalities, the state, and international organizations to provide services efficiently and effectively is, according to the respondents, undermined by corruption, cronyism and nepotism. Thirdly, the *willingness* of elites (national and international) to distribute to those most in need is strongly criticized by all respondents. Lack of *transparency and accountability* create the opportunities for reproduction of existing inequalities. Fourthly, and related to the second point, respondents, both from donor organizations and recipient organizations (municipalities), tend to position themselves as proponents of the 'good governance' discourse, in particular in relation to the 'integrity', 'accountability' and 'capacity'. This discourse is criticized by some of the academic literature, in particular in relation to so-called 'fragile states' (Brinkerhoff, 2007; Chandler, 2005; Menkhaus, 2006; Moore, 2005; Woodward, 2007), but widely accepted by international organizations (OECD, 2008). The fact that all respondents position themselves as proponents of particular aspects of good governance could point towards: (a) selective sampling of like-minded respondents, which is not unlikely with snowball sampling; (b) agreement amongst and

across donors, intergovernmental organizations, INGOs and recipient organizations alike about the importance of good governance or (c) a selective upset about the outcome of processes through which the *bargain* between donors and recipients is struck, reinforced and institutionalized.

6. CONCLUSION

The question at the start was how we can understand the widespread and persistent perception of *aid ineffectiveness* applied to North-Lebanon. The face-to-face interviews and literature study first established the perceptions of aid-(in)effectiveness in North Lebanon in great detail. We found three discourses, the first very critical of the way in which international aid is organized; the second that showed that the good governance discourse is applied by recipients and donors alike; and the third discourse referring to problems arising from donor-recipient relations. The discussion in previous section shows a remarkable similarity with the conceptualization of the social contract between citizens and the state.

The OECD argues that the social contract "emerges from the interaction between a) *expectations* that a given society has of a given state; b) *state capacity* to provide services, including security, and to secure revenue from its population and territory to provide these services (in part a function of *economic resources;* and c) *élite will* to direct state resources and capacity to fulfill social expectations. It is crucially mediated by d) the existence of *political processes* through which the bargain between state and society is struck, reinforced and institutionalised. Finally, e) *legitimacy* plays a complex additional role in shaping expectations and facilitating political process. Legitimacy is also produced and replenished – or, conversely, eroded – by the interaction among the other four factors." (OECD, 2008:18).

The text adjusted by us in order to make it relevant to the case of donor assistance then reads that the 'social contract' between *recipients* and *international organizations* "emerges from interaction between a) *expectations* that a given *recipient* has of *international assistance*; b) *capacity of international organizations,* state organizations and municipalities together to provide services needed to those most in need*;* and c) *élite will* to direct resources – whether from the state or international organizations or both – to those who are most in need, and their capacity to fulfill social expectations. It is crucially mediated by d) the existence of processes through which the bargain between donors and recipients is struck, reinforced and institutionalized" (adjusted from OECD, 2008:18). When we then, accordingly, apply the conceptualization of 'social contract' to a situation where donors, intergovernmental organizations, recipients and other stakeholders interact with each other, we can only conclude that there is a severe lack of social contract between these stakeholders in North-Lebanon. The perception of aid ineffectiveness should therefore be understood as the manifestation of the lack of social contract between recipients and international organizations in North-Lebanon.

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