Integrating climate adaptation, water governance and conflict management policies in lake riparian zones: Insights from African drylands

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ABSTRACT

As river basin authorities and national governments develop policies to achieve sustainable development outcomes, conflicting signals between existing policies are undermining cross-thematic integrative modes of policy planning. This raises fundamental questions over how coherent portfolios of policy interventions across vital themes can best be advanced and managed. Taking the Lake Chad Basin (LCB) as an empirical example, we analyse transboundary policies and intervention documents relating to climate adaptation, water governance and conflict management to ascertain the interdependencies at the adaptation-water-peace nexus. Using a Qualitative Document Analysis (QDA) approach and a set of subjective integration scoring criteria, we assess whether and how integration is planned, setting out ways forward for mutually beneficial integration actions. Despite recent progress in addressing lake drying and recognising cross-thematic challenges, most LCB intervention plans continue to adopt standalone basin-scale agendas and seldom consider action plan preparedness based on local-level assessments. Analysis of a few (existing) cross-thematic, well-integrated initiatives indicates that the timings of societal challenges and funding arrangements appear to play a key role in shaping policy strategies, the manner in which climate adaptation, water or security are treated and the level of integration attained. Based on the notion that integration is inherently desirable, we suggest a new 'policy integration thinking' that embraces a development landscape logic and balances short-term and long-term development priorities.

1. Introduction

Water is a medium through which societies in lake riparian zones will experience climate impacts, as well as lake drying and conflict challenges (Rast, 2014; Dinar et al., 2015). It represents the means through which climate adaptation will spur conflict management and better livelihood outcomes. Water is not a sector *per se* in a transboundary context (Subramanian et al., 2014), but a resource for livelihood development, climate adaptation and peace building. As such, effective water governance and human security planning will need to take adaptation into account, and conversely, climate adaptation initiatives will require water and security interventions to succeed (Babcicky, 2013). Indeed, water action, peace action and climate action need to move together to engender social stability in transboundary lake regions (Gustafsson, 2016). This justifies why the integration of climate adaptation, water governance and conflict management in conflict-prone settings is now incorporated within progressive discourses of international environment and development agendas

(Ludwig et al., 2011). Yet, integration[1] has not been mainstreamed by national decision-makers or transboundary river basin authorities of many developing countries (Gerstetter et al., 2011), possibly due to a lack of ready-to-use, evidence-based decision-support tools that can inform the process of cross-thematic integration.

We present findings emerging from a Qualitative Document Analysis (QDA) of action plans, initiatives, strategies and advisory engagements regarding climate adaptation, water resources governance and conflict management. Analyses of cross-thematic interventions and their integration are relevant to identify where initiatives on key thematic areas support or conflict one another. The article is developed on the premise that a lack of effective cross-thematic action plans in dryland transboundary settings may impede climate adaptation, spur water competition and aggravate conflicts (Babcicky, 2013). Thus, institutionally-driven policy initiatives can be an essential part of integrating climate adaptation, water governance and conflict management efforts, including enabling situations where achievement of development agendas in one area of societal concern does not

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[1] We contextualise 'integration' as when climate adaptation actions include options for water governance and conflict management, when water governance activities accommodate adaptation and conflict prevention approaches, and when conflict management efforts account for climate adaptation and water governance needs.

undermine the achievement of the agendas of another (Stringer et al., 2014).

The article is grounded in the Lake Chad Basin (LCB) riparian zones of Cameroon, Chad, Niger and Nigeria. Economic development in these dryland zones has been sluggish since the 1980s (Okpara et al., 2015). Dialogues on cross-thematic interventions within the LCB have identified the importance of strengthening partnerships and collaboration to manage the resources of the basin and to address the impacts of environmental changes, as well as to develop an appropriate institutional context to support needs-based policy actions (Asah, 2015). The need to harmonise and drive actions on resource management was recognised in the mid-1960s following the Forty Lamy Convention (Sand, 1974), which led to the establishment of the Lake Chad Basin Commission (LCBC). The LCBC is a water cooperative agent that serves as a regional agency for communications between governments, NGOs and communities, and also for cross-ministerial/sectoral communications on climate change, security and water governance issues (Odada et al., 2006). Its key role is to facilitate benefit-sharing between riparian countries and prevent unilateral actions that may harm local livelihoods and riparian economies (see LCBC, 2015).

Despite the central role of the LCBC, the Lake area remains a vulnerability hotspot (see Okpara et al., 2016a). Several action plans have been initiated, yet analyses are lacking regarding whether actions/initiatives on water, climate adaptation and security are being integrated sufficiently to encourage mutual co-habitation and resilience building at the basin level. In this article, we identify and evaluate policy intervention documents related to the LCB, and identify ways forward that better integrate climate adaptation, water governance and conflict management goals based on LCB's experience. We ask:

- What is the range of policy initiatives developed/implemented to reverse lake drying and promote better livelihoods?
- Is adaptation-water-peace integration planned?
- What considerations/new ways of thinking about policy integration are needed to integrate policies or goals related to climate adaptation, water governance and conflict management in a transboundary basin context?

Document screening identified whether subjects pertaining to climate adaptation, water governance/management and conflict management/peacebuilding featured in the LCB's policy actions and initiatives. This pinned down both the content of policy goals/initiatives and the drive towards integration. Document analysis then identified whether and how integration is planned, elucidating lessons for future planning. The approach presupposes that the LCBC's action plans and policies reflect integration espoused at the international level at least in the past decade (i.e. the period conflicts increased markedly across the region). This is because the LCBC, by its mandates, is aware of the various manifestations of environmental hardship and contentions across the basin's riparian zones and is supported by the riparian states and development/donor agencies to integrate cross-thematic issues and pursue developmental objectives.

2. Theoretical basis

2.1. Climate adaptation, water and conflict management

Climate adaptation has continued to rise on the agendas of states, development actors and researchers, spurred by the growing evidence that changes in climatic conditions are real and already undermining security in several places (Mcgray et al., 2007). Although climate adaptation has been defined as 'adjustment in natural or human systems in response to actual or expected climatic stimuli or their effects, which moderates harm or exploits beneficial opportunities' (IPCC, 2014, p. 5), multiple environmental, technical and institutional measures qualify as adaptations. They range from local dams and urban water desalination infrastructure to water markets and pricing strategies. Some measures can nevertheless spur more harm than good in riparian zones, or can enhance carbon emissions. Adaptations that increase risks have been called 'mal-adaptations' (Barnett and O'Neill, 2010; Juhola et al., 2016). Broadly, climate adaptations can lead to conflict in several ways, if they are: (i) incoherent with important socio-political processes (e.g. poverty reduction and water management); (ii) designed to capture national level concerns at the expense of subnational challenges; (iii) not participatory enough to engage affected individuals and stakeholder groups; (iv) designed to reinforce inequities or 'set up' distinct groups or communities as competitors; (v) perceived as illegitimate, especially if they ignore property rights.

Mal-adaptation has become vital in the debate regarding security implications of climatic disturbances (Kallis and Zografos, 2014). To prevent mal-adaptation, climate adaptation planning needs to be conflict-sensitive (Barnett and O'Neill, 2010; Babcicky, 2013; Rüttinger et al., 2015; Juhola et al., 2016). To achieve this, security policy discussions need to align with those on adaptation design (i.e. to reconceptualise climate adaptation in the language of security) applying, e.g., the 'do no harm' principle (Tänzler et al., 2013). This principle aims to engender socio-political transformation and foster opportunities to build sustainable societies. Effective adaptations should not erode established social cohesion – they should not generate friction or resistance (Milman and Arsano, 2014). Similarly, Babcicky (2013) suggests that there is need to: understand the context in which people live and work, including how institutions operate; understand the interactions that are prevalent in different areas, including between sectors, activities and contexts; and act upon these understandings to prevent potential negative effects in order to optimise positive ones. Indeed, the task for conflict-sensitive climate adaptation action requires multiple tiers of actions across scales (household to the global level), alongside effective coordination (reconciliation) of approaches between vital policy areas (Vivekananda et al., 2014). It also demands negotiation amongst stakeholders with diverse agendas and preferences (Gustafsson, 2016).

Water governance represents 'the exercise of authority' in water-related actions (Kuzdas and Wiek, 2014). Governance can indeed encompass conflict management (Gehrig and Rogers, 2009). Water cannot be governed for one purpose or in the case of shared water, for a single country; it is inherently a political issue requiring multi-level participation and engagement. The growing water crisis around the world is increasingly considered a problem of governance rather than one of scarcity (Perreault, 2014; Dinar et al., 2015). In structuring water governance, policies often map the overall direction, whereas laws create the official or informal 'rules of service delivery' and authorise the institutional or organisational structure to drive policy implementation. Policies as purposive courses of action are often made explicit in documents by a capable authority/state. Laws encompass written, unwritten or customary rules and practices. Together, policies and laws create the 'governance template' that constitutes the action plan for institutions and management practices. If policies, laws and organisations set the institutional structures, decision-making processes enhance the manner in which actors, stakeholders and the general public proceed along the water governance ladder (DE Stefano et al., 2014).

Robust decision-making processes that are participatory and decentralised facilitate good water governance (Tortajada, 2010). Such processes can place new ideas before key decision-makers, facilitating awareness of the opinions held by society (Matthews and Schmidt, 2014). Good water governance is essential for peaceful co-existence in lake environments (Grafton et al., 2013). Several approaches exist for transboundary locations (Subramanian et al., 2014; Dinar et al., 2015). Designing treaties for joint river governance requires paying attention to the web of bilateral and multilateral interactions that influence interests, regulations, and responsibilities within riparian zones and lakeside communities (Turner et al., 2012). Other approaches include: (i)

imposing water-use reductions by the central government/institution based on prevailing political economies; (ii) centralisation of basin water management using basin institutions and water acts; (iii) empowering multiple jurisdictions, including informal customary institutions to govern water use in less centralised ways; (iv) water reforms that enable equity in water sharing and rights; and (v) matching legislative goals with on-the-ground water governance needs (Grey and Sadoff, 2002; Grafton et al., 2013).

Transboundary water governance is nevertheless complicated by political borderlines and boundaries, including varied perceptions about how best to share the variety of 'public goods and services' river basins supply (Gleditsch et al., 2006), and these can lead to inter-state tensions or conflicts. Climate disturbances present an additional challenge given their influence on river inflows, and in shaping how treaties and negotiations are framed (Dinar et al., 2015). With heightened uncertainty regarding future climate and water conditions, water governance represents an essential feature of water preservation, peaceful negotiations and climate adaptation processes in transboundary basins.

Conflict management is vital in transboundary water governance (Hensel et al., 2006), encompassing peacebuilding concepts such as conflict prevention, resolution and transformation (Babcicky, 2013). These concepts are often used interchangeably, to either tackle root causes of conflicts or contain them (Turner et al., 2012). The transformative potential of conflict is realised through effective management, and this can drive innovation in water governance (Brochmann and Gleditsch, 2012; Nursey-Bray, 2016).

While water may be central to conflicts in dryland, climate-impacted locations, conflict management will need to link up well with wider water governance and climate adaptation to improve human well-being. It requires adaptation that facilitates common positions and win-win actions that e.g. stabilise existing tensions (Gehrig and Rogers, 2009; Scheffran et al., 2014). Whether conflict management succeeds depends on factors including the governance capacity of institutions to transform conflicts into cooperative engagements.

2.2. Framing cross-thematic policy integration

A key overriding basis for policy integration across climate adaptation, water and conflict, is that adaptation and conflict management conflate to some extent, as suggested by the terms 'conflict-sensitive adaptation' (Tänzler et al., 2013) and "climate proof peacebuilding" (Gustafsson, 2016). It also premises that climate change has cross-cutting implications. The range of institutional policies advocating climate adaptation is increasing for several water-scarce regions, and the majority are planned to account for conflict management needs through better water governance in light of extreme climatic conditions (Hensel et al., 2006; Mcgray et al., 2007). 'Integration' requires proper problem conceptualisation, including understanding how the compatibility of an integrated adaptation-water-conflict policy can co-exist with national/transboundary action plans and agendas, and the level of institutional support that can be facilitated through funding, scientific knowledge and other practical support (Gehrig and Rogers, 2009; Goulden and Few, 2011; Mugagga and Nabaasa, 2016).

Climate adaptation, water and conflict span various policy sectors that are often considered separately. If these areas are within the mandate of one department or institution, integration can become significantly easier (Gustafsson, 2016). Since it is no longer suitable to use a standalone climate adaptation measure to address the multiplicity of instability drivers in developing countries (Stringer et al., 2014), integration across key policy areas holds promise (Babcicky, 2013), harmonising "scattered approaches", aligning them to reduce vulnerabilities (Cox et al., 2016). Integration helps to avoid setbacks in transboundary plans that target community and livelihood security, ensuring that policy-making, budgeting and implementation can deliver multiple solutions to local resource users. Indeed, integrating climate adaptation, water governance and conflict management can be well suited to local development processes (Cox et al., 2016), constituting the 'peace conduit' needed for amicable communal and livelihood relationships (Tänzler et al., 2013).

3. Research design and methods

Qualitative document analysis (QDA) approach was employed to systematically evaluate a sample of LCB-related policy intervention documents covering issues pertaining to climate adaptation, water and conflict. Evaluation sought to ascertain whether: (i) themes related to water, security/conflict and climate adaptation were considered in the policy documents developed or promoted by the Lake Chad Basin Commission (LCBC); and (ii) statements pertaining to these three themes are integrated, including the contexts in which integration has been approached. Integration is considered to occur when climate adaptation actions include options for water governance and conflict management, when water governance activities accommodate adaptation and conflict prevention approaches, and when conflict management efforts account for climate adaptation and water governance needs. Policy in this research refers to any initiative, action plan or decision oriented towards either a short or long-term goal or to a particular problem in and around the LCB (Gerstetter et al., 2011).

QDA (Altheide et al., 2008; Gerstetter et al., 2011) is often used in qualitative assessments of written documents to unpack meanings, contexts and implications of text and/or narratives. QDA uses subjective criteria, e.g. scores, across a series of linked steps that facilitate rigour and consistency in document analysis (LE Gouais and Wach, 2013). Such steps include: setting criteria for screening and selection of documents, sourcing for documents, setting criteria for document analysis, and conducting qualitative analysis and validation (DE Stefano et al., 2014).

In this study, official documents on key intervention projects and strategies from the LCBC, including those developed in collaboration with its partners (e.g. the World Bank and African Development Bank) covering the LCB geographical zones were selected and sampled (n = 20). Documents that did not meet the geographical zone specification were screened out, leaving 12 for further analysis. Documents selected were those targeting key intervention needs in the LCB – particularly on development, climate change, security, water management and resilience building, and included published and unpublished publicly available draft versions of action plans, initiatives and strategies. The LCBC website and other online sources were searched to collate the documents. Triangulation via informal discussions with LCBC officials on which documents were appropriate to investigate further confirmed our selection. Whilst the assessment here cannot claim to include all related policy documents, the analysis showed gaps in vital areas across water, climate adaptation and security/conflict, which reflect the state of integration for many of the LCBC-coordinated interventions.

Document analysis began by reading each document in detail, marking keywords, phrases and sections, and identifying the meanings they communicate in relation to 'climate adaptation', 'security', 'climate impact', 'conflict' and 'water', including identifying the range of initiatives proposed or implemented in the document. Next, the specific aims and approaches/strategies proposed were identified including the wider discursive context shaping such approaches (i.e. the contexts in which the approaches are situated). Further reading led to identification of more keywords, such as water management (e.g. water transfer and conservation), conflict resolution (e.g. peacebuilding, cooperation and prevention). These further guided the in-depth analysis which followed a series of questions about whether water, conflict and climate adaptation are considered in the LCB policy documents, and the contexts in which they are approached (see Supplementary material).

The chronology of the initiatives was evaluated to understand trends in the LCBC intervention priorities and the evolution of climate adaptation, water and conflict over time. To evaluate whether policy

Table 1
Integration criteria and scoring approach (modified from LE Gouais and Wach, 2013).

Type of integration	Description of integration/scoring approach	Score
No integration	There is a complete lack of evidence in the policy/strategy to suggest that thematic issues or statements are harmonised and/or integrated.	0
Unclear integration	The three key themes/issues were mentioned briefly/fleetingly, but details were lacking as to whether the policy pointed to integration.	1
Mild or limited integration	The policy supports integration of two of the three thematic issues (i.e. climate adaptation and water governance, or conflict resolution and water management). Lack of details to guide activities and plans for integration.	2
Moderate or partial integration	Policy initiatives support all three themes (adaptation, water and security) and suggest a need for alignment/integration, especially in the form of general statements. Yet such initiatives are less clear and distinct regarding how integration could be achieved. Relatively fewer details and guidelines are included within the policy document.	3
High or full integration	Policy actions are coordinated and aligned strongly across adaptation, water and security statements. Policy integration devotes specific attention to conflict management and water governance in relation to climate adaptation/resilience needs. It includes numerous and detailed complementary strategies and actions for achieving integration (triple-objectives).	4

integration across adaptation, water and security needs is planned, a subjective scoring approach was developed (Table 1) following LE Gouais and Wach (2013). Scoring criteria screened the meanings of text by focusing on narratives, including keywords, identified during document assessment as building blocks to guide the scoring. Initial results were validated through telephone discussions with staff members of the LCBC (n = 7). By ensuring that the analysis and conclusions were based on what was written in the sampled documents, the approach adopted facilitated credibility, reliability, dependability and impartiality.[2]

4. Results

4.1. What is the range of lake-related policy initiatives developed/ implemented to reverse drying and promote livelihoods?

Table 2 shows the findings from the qualitative analysis. Lake degradation has been prominent in many LCBC policy documents since the 1980s. Before then, particularly between 1964 and 1984, much policy attention focused on addressing droughts and desertification (LCBC, 2016). This focus was broadened following a transboundary diagnostic study on the status of the Lake commissioned by the LCBC and the United Nations Environmental Programme in the late 1980s. The diagnostic study formed the basis for four key policy initiatives undertaken by the LCBC since the early 1990s: the Vision 2025 (developed in 2000) for the sustainable development of the LCB, the Strategic Action Plan (SAP) for the reversal of land and water degradation trends in the LCB ecosystem (developed in 2008), the LCB Water Charter (drafted in 2011) and the initiative on Water Transfer from the Congo basin via the Ubangi River to the LCB (the idea was raised in the late 1980s, but to date it is yet to be implemented). The desire to drive the implementation of these key policy initiatives gave rise to several other initiatives (Table 2). Each initiative has a variety of overarching theme(s). Because three important themes – i.e. climate adaptation, water governance and conflict management needs – are central to the developmental objectives of the LCB, the existing initiatives were screened and categorised under these three themes.

Climate adaptation was not specifically mentioned in the LCBC operational mandates when it was established 1964. It became of interest following massive degradation of the LCB's environment in the 1980s and 1990s. The document on the 'adaptation to climate change in the LCB (ACCLC)' initiative launched in 2013 by the German Federal Ministry for Economic Cooperation and Development (in collaboration with the LCBC) notes that climate change has an acute impact on livelihood activities and that LCB populations need to develop adaptive capacities (GIZ, 2015). The initiative seeks to provide expertise on

climate and agricultural adaptations to enable the water and environment department of the LCBC to provide comprehensive advice to local resource users and member states on adaption. This initiative (ongoing until 2018) fills an important knowledge gap in the LCBC climate change adaptation strategic development (LCBC, 2016).

Beside a few cross-thematic initiatives such as the LCB Sustainable Development Programme (PRODEBALT) addressing adaptation and other societal challenges, there is no record of any initiative that has focused solely on climate adaptation needs before 2013. Yet, there has been interest in adapting local and modern agricultural practices to climate change (through, for example, establishment of demonstration plots for knowledge transfer, provision of irrigation facilities and different seed varieties, and improved storage practices), which are largely within the context of autonomous adaptation practices aimed at increasing rural agricultural production. While regional emphasis on adaptation has grown markedly since 2013, inclusion of adaptation in several recent cross-thematic initiatives suggests that climate adaptation is becoming integrated with other thematic issues.

Water is central to the majority of the initiatives analysed. Three initiatives in particular focused solely on water issues. These are the: (i) LCB strategic action plan, (ii) the Master plan for the development and environmentally sound management of the LCB resources, and (iii) sustainable water resource management of the LCB. Together, these initiatives target the realisation of the water component of vision 2025 (Table 2).

Although security and conflict resolution are relevant to the mandate of the LCBC, several LCBC initiatives address security concerns through improvements in people's lives based on the belief that poverty is at the root of insecurity (Jakobsen et al., 2013). However, the increased frequency of e.g. cross-border thefts and banditry activities, common-border kidnapping and killings, and Boko Haram violence since the 2000s, spurred the creation of a Multinational Joint Task Force (MNJTF) in the mid-2000s (African Union, 2015). The task force initiative later metamorphosed into the LCBC strategy against Boko Haram in 2015. The primary goal of this multi-partner, counter-terrorism initiative is to eradicate insurgency from the region. Being the only bold, widely-accepted regional conflict and security initiative, its implementation is regulated by the African Union Peace and Security Council (AUPSC) within the context of a 'strategic concept of operations for the MNJTF'. All operations are structured within well-defined operational areas in the basin and in strict compliance with international humanitarian law (African Union Peace And Security Council, 2015).

Several policy interventions are cross-thematic (Table 2). For example, adaptation, water and security goals are included in several places in the Programme for the Rehabilitation and Strengthening of the Resilience of Socio-ecological Systems in the LCB (PRESIBALT) (AfDB, 2015) and the Lake Chad Development and Climate Resilience Action Plan (LCDAP) (Mekonnen, 2016). These initiatives were launched between 2015 and 2016, and embraced the nexus of climate change adaptation, water shortages and conflict challenges around the basin territory. While the Vision 2025, inter-basin water transfer

Table 2
Findings from the qualitative analysis.

Theme of the initiative contained in sampled document	Overarching goal and the associated thematic area(s)	Source
Inter-basin water transfer (**idea raised in the late 1980s– yet to be implemented**)	Plan and implement inter-basin water transfer from the Congo basin via the Ubangi River to the LCB (a distance of about 1350 km) in order to halt the degradation of the LCB (**water and security/conflict**)	Steely (2014); LCBC (2016)
Strategic Action Programme (SAP) for the Lake Chad Basin: reversal of land and water degradation trends in the Lake Chad Basin ecosystem (**launched in 2008**)	Reverse land and water degradation trends in the LCB ecosystem, improve water quantity and quality, and enhance regional environmental cooperation to improve environmental stewardship (**water**)	SAP (2008)
The Master plan for the development and environmentally sound management of the natural resources of the Lake Chad Basin (**launched in 1992**)	Develop and ensure environmentally sound management of the LCB freshwater resources (**water**)	LCBC (1992)
Lake Chad Vision 2025 (**developed in 2000**)	The broad vision indicates that: "The Lake Chad Region would like to see by the year 2025 the Lake Chad – common heritage – and other wetlands maintained at sustainable levels to ensure the economic security of the freshwater ecosystem resources, sustained biodiversity and aquatic resources of the basin, the use of which should be equitable to serve the needs of the population of the basin thereby reducing the poverty level" (**water and security/conflict**)	LCBC (2002, p.3)
The Lake Chad Water Charter (**drafted in 2011**)	This constitutes a binding framework whose goal is to promote sustainable development in the LCB through integrated, equitable and coordinated management of natural resources, in particular the Lake's water resources, in order to achieve higher standards of living, poverty alleviation, good governance and stronger sub-regional solidarity and integration (**water and security/conflict**)	African Water Facility (2011)
Programme to Rehabilitate and Strengthen the Resilience of Socio-ecological Systems in the Lake Chad Basin (PRESIBALT) (**launched in 2015/2016**)	Build the resilience of socioecological systems for sustainable and inclusive development in the LCB by preserving and developing water resources, develop ecological services and value chains, and build institutional capacity and programme management (**adaptation and water and security/conflict**)	AfDB (2015)
The LCBC strategy against Boko Haram (the Multinational Joint Task Force (MNJTF) Strategic Concept of Operations (CONOPS)) (**launched first in the mid-2000; later repackaged in 2014/2015**)	A multinational military formation involving five nations (Niger, Nigeria, Cameroon, Chad and Benin) aimed to checkmate banditry activities, deal with common border security issues and completely eradicate the Boko Haram terrorist group operating in the LCB territory (**security/conflict**)	African Union (2015); African Union Peace And Security Council (2015)
The Lake Chad Development and Climate Resilience Action Plan (LCDAP)(**a new intervention, launched at the COP21 meeting in Paris in 2015**)	A multi-sectoral development and climate resilience action plan aimed at turning the LCB into a rural hub for regional development by facilitating employment generation, enhancing food security, promoting social inclusion of young people and women, building resilience, restoring peace and security, and improving living conditions (**adaptation, water, security/conflict**)	Mekonnen (2016)
The Lake Chad Basin Sustainable Development Programme (PRODEBALT) (**launched in 2008; project ended**)	Focused on three components: – natural resources management and adaptation to climate change; integrated management and sharing of water resources; and regional co-operation and integration (**adaptation and water**)	AfDB (2008)
Adapting to climate change in the LCB (**launched in 2013; ongoing**)	Implement effective measures for adapting agricultural practices in the LCB to climate change by: raising awareness on climate change among local producer groups and associations; adapting local and modern agricultural practices to climate change; and providing input for LCBC climate adaptation strategy development (**adaptation**)	GIZ (2015)
Sustainable water resources management of the LCB (**launched in 2011**)	Strengthen the planning, cooperation and communication capacities of the LCBC for the better performance of its tasks and to achieve sustainable results in terms of fulfilling its water mandates (**water**)	LCBC (2016)
Strengthening Climate Information and Early Warning Systems (EWS) for Climate Resilient Development and Adaptation to Climate Change in the LCB area (**launched in January 2016**)	Enhance the LCBC adaptation planning process in order to promote water security and climate resilience in the basin; improve safety, increase awareness in disaster-prone and climate affected zones in the basin; provide and enhance observing and monitoring technologies, build capacity through technical training on how to maintain weather/climate and water flow/quality stations, and use of recorded data; and deliver early warnings in timely and effective manner (**adaptation and water**)	Global Water Partnership (2016)

initiative and the Water Charter included requirements to address water and security/conflict issues, the Programme on the Sustainable Development of the LCB (PRODEBALT) focuses more on adaptation and water issues within the context of sustainable poverty reduction. These cross-thematic initiatives indicate that the timings of societal challenges linked to lake drying play a key role in shaping the range of policy strategies and action plans the LCBC initiates, the manner in which adaptation, water or security are treated, and by extension, the level of integration attained.

4.2. What approaches exist?

A range of approaches for climate adaptation, water management/governance and conflict/security management were identified (see Table A1 in the Supplementary material). Several approaches mentioned in each of the adaptation-focused (e.g. the initiative on adaptation to climate change in the LCBC), water-based (e.g. the initiative on sustainable water resources management of the LCB) and the conflict-oriented documents (e.g. the MNJTF initiative) were repeated in the cross-thematic documents (e.g. the LCDAP and PRESIBALT).

Although documents containing cross-thematic initiatives generally addressed two (e.g. water and conflict in the inter-basin water transfer initiative) or three (e.g. adaptation, water and conflict in the LCDAP initiative) of the themes less well than initiatives focusing on one theme, in most cases they considered the challenges pertaining to the various themes to a similar degree as single-themed initiatives. While the approaches coalesce around sustainable development for the LCB, they reflect the dynamic nature of adaptation, water availability and human conflict behaviours. They also point towards the need to attain a desired 'stable' state for the LCB environment and its populations.

Climate adaptation initiatives reflect an awareness of the effects of climate disturbances on agriculture and water resources, and the implication for resource degradation, poverty and other underlying drivers of vulnerability. Indeed, how the Lake Chad populations adapt to extreme climatic events is a pressing security and development concern for the LCBC (GIZ, 2015). Although adaptation approaches are designed to reach the poorest villages, they are simply development-oriented and concerned about: (i) addressing drivers of vulnerability amongst vulnerable populations (e.g. to reduce spread of malaria and HIV, provision of seeds, pesticides, irrigation and storage facilities); and (ii) building response capacities of the LCBC (e.g. through improved weather/climate monitoring, building early warning/response systems, effective communication systems, and natural resource management practices).

There are limited wider efforts to buffer households and communities against climate shocks (e.g. through developing climate-proof infrastructure/housing, robust systems for decision-making, including disaster response and resettlement planning). Similarly, because the majority of adaptation approaches are autonomous, conflict-sensitive adaptation initiatives remain limited. For example, there is a limited focus on comprehensive pastoral 'laid-out' routes to reduce 'conflict contacts' between pastoralists and other occupational groups. The majority of adaptation approaches related to water and agriculture do not seem to explicitly link the twin challenges of climate and conflict in a way that suggests that addressing climate disturbances will help to reduce human insecurity and conflict. For example, it is unclear how efforts to control desertification and maintain vegetation cover will prevent conflicts between pastoralists and individual actors charged with the implementation of this adaptation objective. In other words, the 'do no harm' approach (Babcicky, 2013) to adaptation planning is explicitly missing.

Water governance and conflict management approaches that embrace adaptation efforts cover development actions on integrated management of Lake Chad resources for poverty reduction (e.g. through improved cooperative irrigation development and desertification control, including partnership engagements for water conservation (LCBC, 2016)). Because the specific climate impacts being addressed are often not explicitly defined, adaptation approaches tend to be more vulnerability-oriented (e.g. helping locals to cope with immediate resource challenges) than impact-focused (e.g. building climate-proof water and community infrastructure for long-term adaptation needs).

While climate adaptation practices were found to be less conflict-sensitive,[3] water governance approaches often accounted for conflict challenges. Water conservation is at the heart of the majority of the water-focused initiatives. To drive conservation, water governance approaches have shifted towards a more decentralised and democratic principle (Table A1). This seems appropriate given the diversity of ethnic groups and nationalities depending upon Lake waters. Regulations on water abstraction exist through the LCBC and are well documented in the Lake Chad Water Charter (e.g. the Water Charter

specified 6 km^3 as the maximum annual volume that can be abstracted from the Lake, including its tributaries and the surrounding aquifers). This volume represents an increase of 4 km^3 over and above withdrawals in 2011 when the charter was ratified (African Water Facility, 2011). Water guards are stationed across several axes of the Lake to ensure compliance and maintain security of access and use. Both water and conflict management approaches embraced several aspects of human and regional security needs, including needs that pertain to social, economic, food, health, and water and livelihood security (Mekonnen, 2016). Climate adaptation seemed to be pursued by focusing on meeting these needs, despite that the approaches did not seem to be 'conflict-proof' in a way that suggests long-term livelihood transformation. Few initiatives, such as the Vision 2025, inter-basin water transfer and the Water Charter initiatives, have longer-term approaches (e.g. the promotion of environmental stewardship, use of sustainable inter-basin legal frameworks and agro-hydrological surveillance systems for water monitoring). The rest appear more event-driven and short-term.

The most frequently mentioned approaches associated with both water governance and conflict management across the documents include: greater regional collaboration and networking based on legal consensus on water use and access rights, use of inter-governmental protocol for the exchange of hydrological data, and use of the agency of the LCBC to govern water sharing and arbitrate over complex disputes that are beyond the capacity of Member States. While timely and effective early warning systems for flood emergency planning constitute the most frequently mentioned approaches for both climate adaptation and water governance themes, clear evidence for conflict management at the community scale (where the majority of the conflict events occur) was largely absent. The LCBC strategy against Boko Haram represents a vital conflict-focused initiative (African Union Peace And Security Council, 2015), yet the focus on eradicating cross-border banditry, kidnapping and violence in Lake Chad leaves a major gap regarding how the LCBC approaches conflict management/prevention in communities. Several conflicts happening at the local level go unnoticed and over time these aggregate to trigger violent conflicts (Okpara et al., 2016a). There were no documents showing how to approach these local conflict dynamics, rather the majority pointed towards poverty reduction and sustainable development as the means to address local conflict dynamics.

4.3. Is integration planned?

Seven of the twelve documents analysed made explicit inter-thematic linkages. These include: three documents focusing on water and security/conflict issues (i.e. inter-basin water transfer, Lake Chad Vision 2025 and the Lake Chad Water Charter initiatives), two documents addressing climate adaptation and water issues (i.e. PRODEBALT and the initiative on strengthening climate information and early warning systems (EWS) for climate resilient development) and two documents focusing on adaptation, water and security/conflict issues (i.e. PRESIBALT and the LCDAP). The results of the analysis on thematic-integration of initiatives/policies are presented in Table A2 (see Supplementary material).

In terms of integration scores, the LCDAP initiative (timeframe 2016–2025) sponsored by the World Bank Group (Mekonnen, 2016) appeared to be the most integrated across adaptation, water and security/conflict concerns. This is followed by PRESIBALT (timeframe 2016–2021), an African Development Bank-sponsored initiative (AfDB, 2015). Both initiatives were launched between late 2015 and early 2016, and as such they explicitly highlight the current urgency to address the triple challenges of adaptation deficits, poor water resources management and violent conflict in the region − despite that they are framed around the Lake Chad sustainable development agendas highlighted in the Lake Chad Master plan, Vision 2025 and the Strategic Action Plan.

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[3] Conflict-sensitive adaptation is "adaptation that recognises and addresses the dynamics that may trigger new or escalate existing conflict in the course of planning, implementation and management of adaptation projects – conflict-sensitive adaptation understands the context it acts upon and strives to minimise negative and maximise positive impacts on human security" (Babcicky, 2013, p. 486).

Findings reveal that despite some progress (in addressing lake drying and societal challenges), climate adaptation, water governance and conflict management are not well integrated into Lake Chad-focused initiatives, at least for several of the initiatives launched before 2015. Indeed, a chronological view indicates that present-day realities may have informed why the PRESIBALT and LCDAP initiatives are more integrated. Crucially, the merging of adaptation, water governance and conflict management has a down side. Donor agencies and development partners often influence the initiatives that are launched and by extension, funding and resource availability have implications in decisions pertaining to whether the adaptation-water-peace thematic issues are integrated or not.

5. Discussion: what considerations are needed to integrate policies/goals related to climate adaptation, water governance and conflict management?

Integration is relevant if vulnerable people, occupational groups and communities targeted by policy initiatives and action plans are to receive developmental assistance, and for climate adaptation, water governance and conflict management goals to be synchronised (Gerstetter et al., 2011). Although the analysis undertaken here did not suggest any significant conflicting signals between the different LCB-focused initiatives, considerable scope exists (given present-day realities around the Lake and the enhanced capacity of the LCBC[4]) to promote a more coherent portfolio of strategies across vital themes if a mutually beneficial condition for adaptation and security is to prevail.

There are several ways climate adaptation and water management approaches, including conflict management actions, coincide, which may serve as a starting point from where policy integration may be achieved: (i) policy initiatives focusing on adaptation goals incidentally embraced freshwater resources needs in the context of livelihood empowerment, indicating that such goals may end up meeting both adaptation and water development/supply needs; (ii) water supply initiatives, such as the proposed water transfer project, are planned in consideration of new security realities under a changing climate − as such the overall development goal of the project indirectly serves as a means to raise awareness about adaptation, water shortages and insecurity; (iii) approaches focusing specifically on achieving security goals encourage dialogue and cooperative engagements, and because adaptation and water governance thrive on cooperative negotiations, collective adaptation and water development approaches serve as means to achieve desired security goals.

A range of factors might explain the lack of cross-thematic integration in the initiatives launched before 2015 despite that climate-induced devastations, water shortages and conflicts were increasingly observed during the period 1980–2015. The LCBC, being a regional institution, is governed and funded by the Summit of Heads of State and Government of member nations, as well as the resolutions of the Council of Water/Environmental Ministers (LCBC, 2016). It relies on external expertise, donor agencies and development partners to develop and fund its various initiatives. Governance and funding arrangements from external sources can reduce opportunities for wider local-level consultations and limit opportunities where requirements for integration are needed. For example, the literature reports that local authorities consider that initiatives for which they can claim ownership are lacking – they are often 'side-lined' and their views are not always considered in action plans that target the Lake territory (see Okpara et al., 2016b). This indicates that action plan preparedness based on local level scoping assessments and consultations remains lacking. Constraints – including time and project costs, availability of skilled

personnel, people's demands, the rigour associated with monitoring and evaluation, lack of information, internal organisational structures and preferences/priorities (Gustafsson, 2016) – can encourage cross-thematic incoherence. Time pressure for action plan preparation and completion can limit scope for comprehensive consultation and integration (Kloos et al., 2013). Limited funding can influence the range of targeted policy issues.

Integrating initiatives requires greater monitoring and more rigorous evaluation approaches (LE Gouais and Wach, 2013). Although Lake Chad-focused initiatives appear largely event-driven, integration can be spurred when various livelihood interests are accommodated, and social relations/identity and status of formal and informal institutions are reconciled, and when community project ownership is encouraged (Turner et al., 2012). The two initiatives with high scores on the integration scale suggest that holistic multi-stakeholder and multi-sectoral co-ordination are relevant to enable integration and also to ensure that gaps are avoided as integration agendas progress. Some of the factors that might have influenced current integration drives, particularly as observed from the PRESIBALT and the LCDAP initiatives, include:

- Poor/incomplete implementation of previous initiatives leading to repackaging of old initiatives as new ones;
- The dynamic nature of adaptation, water availability and human security requiring greater policy attention and funding;
- The new sustainable development goals serving as motivations to the World Bank Group and the African Development Bank, as well as to other donor agencies, in terms of funding commitments to address present-day poverty and humanitarian crises in the LCB territory;
- The Boko Haram crises that have shaped improved inter-governmental collaborations and collective interests to better understand and tackle context-specific environmental and security issues in the LCB.

While this analysis is based on the proposition that integration is inherently desirable, limiting future initiatives to dominant approaches present in previous policy actions may not necessarily be helpful. Our findings show that approaches for water governance and conflict management in the LCB often coalesce around inter-governmental Lake water restoration planning linked to sustainable development and poverty reduction. Water and conflict management approaches suggest a vital entry point for adaptation actions. Climate adaptation practices for water and agriculture are largely reactive and autonomous (Okpara et al., 2016b). Given the uncertainties associated with water supplies and security dynamics in the region, there is a need for proactive, government-led adaptation planning with a long-term outlook. Anchoring adaptation planning in sound decision-making processes that enable principles of good governance (e.g. actions that engender inclusiveness, equity, transparency and accountability), can create room for adaptation priorities that align with water development and human security goals, and thus enhance capacities to build resilience and co-operation.

Integrated initiatives (such as the PRESIBALT and the LCDAP) require a secure environment to be fully implemented. This will involve initiating regular conflict assessments, as well as developing more joint coordination mechanisms through relevant local powers and ministries (i.e. promoting vertical synergies) in a manner that demonstrates humanity, neutrality, impartiality and interdependence (Mcgray et al., 2007). Crucially, the integrated initiatives reveal that funding mechanisms, including the capacity of donor agencies to drive policy coherence, are vital for integration.

All the initiatives and strategies reviewed here explicitly suggest that significant investment is needed to reverse the current antisocial and unfavourable environmental trends in the LCB. However, environmental stewardship that promotes long-term adaptation, effective water governance (based on the principles of governance/management

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[4] In January 2016, the LCBC went through a restructuring process to strengthen its capacity to deliver on its mandates, particularly in the context of the current challenges facing the LCB.

emphasised in the Water Charter and SAP documents) and conflict management is required in order to make any investment in the region meaningful in the long run. The themes (adaptation, water and conflict) emphasised in this analysis represent both a challenge and also an opportunity for development, including opening scope for the inclusion of social and cultural issues that are inherent in the vast wealth of knowledge held by indigenous people.

6. Conclusions and recommendations

This article addresses integration needs for Lake zone related policy actions on climate adaptation, water and security. It presents valuable insight about the range of key LCB focused initiatives targeting how cross-thematic goals are integrated. The majority of initiatives reviewed are somewhat cross-thematic with core interests centred on water preservation and regional development, yet integration is largely missing – except for two recently launched initiatives accounting for climate adaptation, livelihood resilience, water governance and conflict management.

If inclusion (and effective coordination) suggest integration, then it is evident that current livelihoods and security concerns around the Lake region may be shifting policy interventions towards a needs-based, cross-thematic integrative mode of development planning. In particular, the current World Bank-sponsored initiative on Lake Chad Development and Climate Resilience Action Plan (LCDAP) reveals some vital integration principles (i.e. new ways of thinking about policy integration) that can serve as vital decision-support strategies: (i) it structures cross-thematic, multi-objective integration by embracing the development landscape logic (i.e. pursuit of well-being in all its dimensions − social equity, individual security, ecological integrity and economic sufficiency); (ii) an integrated context assessment was adopted as the foundation for planning the initiative; (iii) it balances short-term and long-term priorities; (iv) it addresses key contextual issues behind climate conflict linkages by coordinating varied local and regional preferences; (v) it is forward-looking in scope; and overall, (vi) vulnerability reduction is the overarching goal. These indicate the considerations needed to integrate cross-thematic goals across water, climate adaptation and security.

The results presented here do not necessarily point to the overall perceptions of the LCBC towards these thematic subjects and the need to integrate them, rather they reflect what is contained or omitted in their published strategy and action plan documents evaluated as part of the exercise in qualitative document analysis. In addition, care must be taken regarding assumptions about LCBC's priorities for the LCB and the extent to which it is developing and ratifying initiatives and approaches for the development of the Lake Chad region more broadly.

Institutionally-governed initiatives in the context of this study have some way to go before a win-win integration approach can be realised going forward. There are suggestions that the Paris agreement and the new Sustainable Development Goals should provide vital entry points to spearhead opportunities for cross-thematic integration of vital issues confronting less developed nations. At minimum, the template provided by these international processes can facilitate the ways in which institutional, financial, technical and political dimensions of policy integration can be understood, reconciled and/or negotiated.

While more attention has been paid to develop approaches to realise cross-thematic goals at the regional level, building processes to realise the same goals at household and community levels is also needed. Institutions, such as the LCBC, that themselves are able to adapt to changing conditions and that can treat policy interventions as experimental or learning processes, can provide a critical supporting environment to realise cross-thematic objectives at all scales. Indeed, some forms of effective transboundary water agreements exist which guarantee water dispute resolution, however the scope of such agreements should be revisited in light of current climate shocks, lake drying and conflict realities. Climate sensitive political leadership is vital here,

so also is a cooperative transboundary conflict management framework. The following are proposed as ways in which a new policy integration thinking (such as the principles inherent in the LCDAP initiative) can be pursued:

- Promote decentralisation as a way to engage participation in action plan design. Decentralisation as a form of governance architecture can promote ownership of the integration process by local actors and thus enhance development of household and community-based solutions;
- Promote knowledge sharing. The 'vulnerable locals' need to understand the laws and regulations that govern their livelihood activities and resource use. Investment in research, education, conflict and water monitoring, and awareness creation is key;
- Embed and vigorously pursue early warning, relief and recovery (to facilitate drought and conflict management);
- Ensure that intervention approaches are collaborative. Responsive, people-centred, context-specific, comprehensive, and prevention-oriented interventions should be pursued in a way that agrees with a 'do-no-harm' principle.

Integration when fully in place can serve as a means to an end, where the end is to improve rural livelihoods and communities through provision of water, food and income opportunities. This outcome-oriented perspective can foster the necessary political will for accelerated and peaceful sustainable development in lake riparian zones.

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Appendix A. Supplementary data

Supplementary data associated with this article can be found, in the online version, at https://doi.org/10.1016/j.envsci.2017.10.002.

References

AfDB, 2008. The Lake Chad Basin Sustainable Development Programme (PRODEBALT): Project Appraisal Report. . Retrieved from http://www.afdb.org/fileadmin/uploads/afdb/Documents/Project-and-Operations/Multinational_Lake_Chad_Basin_Sustainable_Develop ment_Programme_-_Prodebalt_-_Appraisal_Report.pdf. (Accessed 5 March 2015).

AfDB, 2015. Programme to Rehabilitate and Strengthen The Resilience of Lake Chad Basin Systems (PRESIBALT). (Retrieved from: http://www.afdb.org/fileadmin/uploads/afdb/Documen ts/Project-and-Operations/MULTINATIONAL_Appraisal_report_Programme_to_Rehabilita te_and_Strengthen_the_Resilience_of_Lake_Chad_Basin_Systems_%E2%80%93_OSAN_Approved_%E2%80%93_01_2015.pdf. [Accessed 16 May 2016]).

African Union Peace And Security Council, March 2015. Communiqué of The 489th AU Peace and Security Council Meeting on Boko Haram Terrorist Group Held on 3. pp. 2015. Retrieved from https://appablog.wordpress.com/2015/03/06/communique-of-the-489th-psc-meeting-on-boko-haram-terrorist-group/. (Accessed 10 May 2016).

African Union, 2015. The African Union and The LCBC Sign an Agreement for The Operationalization of The Multinational Joint Task Force to Counter The Boko Haram Terrorist Group. Retrieved from http://unoau.unmissions.org/sites/default/files/auc-press-release-boko-haram-16-10-2015.pdf. (Accessed 7 January 2016).

African Water Facility, 2011. The Water Charter of the Lake Chad Basin. Retrieved from http://www.africanwaterfacility.org/fileadmin/uploads/awf/Projects/MULTIN-LAKEAirT_Precip.html#detail. (Accessed March 13 2016).

Altheide, D., Coyle, M., Devriese, K., Schneider, C., 2008. Emergent qualitative document analysis. In: Hesse-Biber, S., Leavy, P. (Eds.), Handbook of Emergent Methods. The Guildford Press, New York.

Asah, S., 2015. Transboundary hydro-politics and climate change rhetoric: an emerging hydro-security complex in the Lake Chad Basin. Wiley Interdiscip. Rev.: Water 2 (1), 37–45.

Babcicky, P., 2013. A conflict-sensitive approach to climate change adaptation. Peace Rev. 25 (4), 480–488.

Barnett, J., O'Neill, S., 2010. Maladaptation. Glob. Environ. Change 20 (2), 211–213.

Brochmann, M., Gleditsch, N., 2012. Shared rivers and conflict – A reconsideration. Political Geogr. 31 (8), 519–527.

Cox, M., Villamayor-Tomas, S., Epstein, G., Evans, L., Ban, N., Fleischman, F., Nenadovic, M., Garcia-Lopez, G., 2016. Synthesizing theories of natural resource management and governance. Glob. Environ. Change 39, 45–56.

DE Stefano, L., Svendsen, M., Giordano, M., Steel, B., Brown, B., Wolf, A., 2014. Water governance benchmarking: concepts and approach framework as applied to Middle East and North Africa countries. Water Policy 16 (6), 1121–1139.

Dinar, S., Katz, D., Stefano, L., Blankespoor, B., 2015. Climate change, conflict, and co-operation: global analysis of the effectiveness of international river treaties in addressing water variability. Political Geogr. 45, 55–66.

GIZ, 2015. Africa Supra-Regional: Adaptation to Climate Change in The Lake Chad Basin. Retrieved from https://www.giz.de/en/downloads/giz2015-en-climate-change-study-africa-supraregional.pdf. (Accessed 12 December 2015).

Gehrig, J., Rogers, M., 2009. Water and Conflict: Incorporating Peacebuilding into Water Development. Retrieved from http://www.crs.org/sites/default/files/tools-research/water-and-conflict.pdf. (Accessed 4 February 2014).

Gerstetter, C., Kampa, E., Mcglade, K., Timeus, K., 2011. Review of International and National Policies and Institutional Frameworks. . Retrieved from http://ecologic.eu/sites/files/project/2013/CLICO_%204_1_main_report_plus_annex.pdf. (Accessed 12 January 2015).

Gleditsch, N., Furlong, K., Hegre, H., Lacina, B., Owen, T., 2006. Conflicts over shared rivers: resource scarcity or fuzzy boundaries? Political Geogr. 25 (4), 361–382.

Global Water Partnership, 2016. Water, Climate and Development Program in Central Africa: Development of a Full Project Proposal on The Establishment of an Early Warning System Within The Lake Chad Basin Area. Retrieved from http://www.org/Global/GWPCAf%20Files/ToRs%20Recruitment%20English.pdf. (Accessed 30 June 2016).

Goulden, M., Few, R., 2011. Climate Change, Water and Conflict in The Niger River Basin. Retrieved from http://www.internationalalert.org/sites/default/files/ClimateChange_WaterConflictNigerRiver_EN_2011.pdf. (Accessed 11 April 2013).

Grafton, R., Pittock, J., Davis, R., Williams, J., Fu, G., Warburton, M., Udall, B., Mckenzie, R., Yu, X., Che, N., Connell, D., Jiang, Q., Kompas, T., Lynch, A., Norris, R., Possingham, H., Quiggin, J., 2013. Global insights into water resources, climate change and governance. Nat. Clim. Change 3 (4), 315–321.

Grey, D., Sadoff, C., 2002. Beyond the river: the benefits of cooperation on international rivers. Water Sci. Technol. 4, 389–403.

Gustafsson, M., 2016. How Do Development Organisations Integrate Climate and Conflict Risks? Experiences and Lessons Learnt from The UK, Germany and The Netherlands. Research Report. Stockholms University. Retrieved from http://www.statsvet.su.se/polopoly_fs/1.282384.1463143383!/menu/standard/file/How%20do%20Development%20Organisations%20Integrate%20Climate%20and%20Conflict%20Risks.pdf. (Accessed 10 June 2016).

Hensel, P., Mclaughlin, M., Sowers, T., 2006. Conflict management of riparian disputes. Political Geogr. 25 (4), 383–411.

IPCC, 2014. Summary for policymakers. In: Field, C., Barros, V., Dokken, D., Mach, K., Mastrandrea, M., Bilir, T., Chatterjee, M., Ebi, K., Estrada, Y., Genova, R., Girma, B., Kissel, E., Levy, A., MacCracken, S., Mastrandrea, P., White, L. (Eds.), Climate Change 2014: Impacts, Adaptation, and Vulnerability. Part A: Global and Sectoral Aspects. Contribution of Working Group II to The Fifth Assessment Report of The Intergovernmental Panel on Climate Change. Cambridge University Press, Cambridge, UK and New York, NY, USA.

Jakobsen, T., DE Soysa, I., Jakobsen, J., 2013. Why do poor countries suffer costly conflict? Unpacking per capita income and the onset of civil war. Conflict Manage. Peace Sci. 30 (2), 140–160.

Juhola, S., Glaas, E., Linnér, B., Neset, T., 2016. Redefining maladaptation. Environ. Sci. Policy 55, 135–140.

Kallis, G., Zografos, C., 2014. Hydro-climatic change, conflict and security. Clim. Change 123 (1), 69–82.

Kloos, J., Gebert, N., Rosenfeld, T., Renaud, F., 2013. Climate Change, Water Conflicts and Human Security: Regional Assessment and Policy Guidelines for The Mediterranean, Middle East and Sahel. Report No. 10. United Nations University Institute for Environment and Human Security (UNU-EHS), Bonn.

Kuzdas, C., Wiek, A., 2014. Governance scenarios for addressing water conflicts and climate change impacts. Environ. Sci. Policy 42, 181–196.

LCBC, 1992. The Master Plan for The Development and Environmentally Sound Management of The Natural Resources of The Lake Chad Conventional Basin. Retrieved from http://www.cblt.org/sites/default/files/masterplandevelopenvirnaturalressourceslcbc.en_.pdf. (Accessed 3 March 2016).

LCBC, 2002. Lake Chad Basin Vision 2025. Retrieved from http://www.cblt.org/sites/default/files/vision_2025_en.pdf. (Accessed 14 February 2015).

LCBC, 2015. The Lake Chad Basin Commission: Mandate and Missions. Retrieved from http://www.cblt.org/en/mandate-and-missions. (Accessed 12 December 2015).

LCBC, 2016. Project Highlight for The Lake Chad Basin. Retrieved from http://www.cblt.org/en/projects. (Accessed 14 April 2016).

LE Gouais, A., Wach, E., 2013. A qualitative analysis of rural water sector policy documents. Water Altern. 6 (3), 439–461.

Ludwig, R., Roson, R., Zografos, C., Kallis, G., 2011. Towards an inter-disciplinary research agenda on climate change, water and security in Southern Europe and neighbouring countries. Environ. Sci. Policy 14 (7), 794–803.

Matthews, N., Schmidt, J., 2014. False promises: the contours, contexts and contestation of good water governance in Lao PDR and Alberta, Canada. Int. J. Water Governance 2 (2), 21–40.

Mcgray, H., Bradley, R., Hammill, A., Schipper, L., Parry, J., 2007. Weathering the Storm: Options for Framing Adaptation and Development. Retrieved from http://pdf.wri.org/weathering_the_storm.pdf. (Accessed 12 May 2014).

Mekonnen, D., 2016. The Lake Chad Development and Climate Resilience Action Plan (summary). The World Bank Group, Washington, D.C. Retrieved from http://documents.worldbank.org/curated/en/2016/01/25811845/lake-chad-development-climate-resilience-action-plan-summary. (Accessed 7 April 2016).

Milman, A., Arsano, Y., 2014. Climate adaptation and development: contradictions for human security in Gambella, Ethiopia. Glob. Environ. Change 29, 349–359.

Mugagga, F., Nabaasa, B., 2016. The centrality of water resources to the realization of Sustainable Development Goals (SDG). A review of potentials and constraints on the African continent. Int. Soil Water Conserv. Res. 4 (3), 215–223. http://dx.doi.org/10.1016/j.iswcr.2016.05.004.

Nursey-Bray, M., 2016. Towards socially just adaptive climate governance: the transformative potential of conflict. Local Environ. 9839, 1–16.

Odada, E., Oyebande, L., Oguntola, J., 2006. Lake Chad: Experience and Lessons Learned. Retrieved from http://www.worldlakes.org/uploads/06_Lake_Chad_27February2006.pdf (Accessed 26 November 2014).

Okpara, U., Stringer, L., Dougill, A., 2015. Conflicts about water in Lake Chad: are environmental, vulnerability and security issues linked? Prog. Dev. Stud. 15 (4), 308–325.

Okpara, U., Stringer, L., Dougill, A., 2016a. Using a novel climate–water conflict vulnerability index to capture double exposures in Lake Chad. Reg. Environ. Change 17 (2), 351–366. http://dx.doi.org/10.1007/s10113-016-1003-6.

Okpara, U., Stringer, L., Dougill, A., 2016b. Lake drying and livelihoods dynamics in Lake Chad: unravelling the mechanisms, contexts and responses. Ambio. http://dx.doi.org/10.1007/s13280-016-0805-6.

Perreault, T., 2014. What kind of governance for what kind of equity? Towards a theorization of justice in water governance. Water Int. 39 (2), 233–245.

Rüttinger, L., Smith, D., Stang, G., Tänzler, D., Vivekananda, J., 2015. A New Climate for Peace: Taking Action on Climate and Fragility Risks. Adelphi, International Alert, Woodrow Wilson International Centre for Scholars Studies and the European Institute for Security, Berlin.

Rast, W., 2014. The 15th world lake conference: an overview of an informative event. Lakes Reservoirs: Res. Manage. 19 (4), 237–239.

SAP, 2008. Strategic Action Programme for The Lake Chad Basin: Reversal of Land and Water Degradation Trends in The Lake Chad Basin Ecosystem. . Retrieved from http://iwlearn.net/iw-projects/767/reports/strategic-action-programme-for-the-lake-chad-basin. (Accessed 3 July 2015).

Sand, P., 1974. Development of international water law in the Lake Chad Basin. Zeitschrift fur Auslandisches Offentiliches Recht und Volkerrecht 34 (1), 73–81.

Scheffran, J., Ide, T., Schilling, J., 2014. Violent climate or climate of violence? Concepts and relations with focus on Kenya and Sudan. Int. J. Hum. Rights 18 (3), 369–390.

Steely, L., 2014. Saving Lake Chad: An Analysis of the Oubangui-Chari Water Transfer Proposal. Retrieved from http://laurensteely.net/writing%20samples/Lauren%20Steely%20-%20Lake%20Chad%20Paper.pdf (Accessed 3 June 2016).

Stringer, L., Dougill, A., Dyer, J., Vincent, K., Fritzsche, F., Leventon, J., Falcão, M., Manyakaidze, P., Syampungani, S., Powell, P., Kalaba, G., 2014. Advancing climate compatible development: lessons from southern Africa. Reg. Environ. Change 14 (2), 713–725.

Subramanian, A., Brown, B., Wolf, A., 2014. Understanding and overcoming risks to cooperation along transboundary rivers. Water Policy 16 (5), 824–843.

Tänzler, D., Carius, A., Mass, A., 2013. The need for conflict-sensitive adaptation to climate change. In: Dabelko, G., Herzer, L., Null, S., Parker, M., Sticklor, R. (Eds.), Backdraft: The Conflict Potential of Climate Change Adaptation and Mitigation. Woodrow Wilson International Center for Scholars, Washington, D.C Environmental Change & Security Program Report 14:2.

Tortajada, C., 2010. Water governance: some critical issues. Int. J. Water Resour. Dev. 26 (2), 297–307.

Turner, M., Ayantunde, A., Patterson, K., Patterson, E., 2012. Conflict management, decentralization and agro-pastoralism in dryland West Africa. World Dev. 40 (4), 745–757.

Vivekananda, J., Schilling, J., Smith, D., 2014. Understanding resilience in climate change and conflict affected regions of Nepal. Geopolitics 19 (4), 911–936.