“Climate change, complex interdependence and development: assessment of Lesotho-South Africa relations”

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Abstract

Climate change and its negative effects on the developing states are a reality of which there is a need to focus on likely mitigation and adaptive strategies to ensure sustainable development. Industrial development back to the 17th century and natural influence could be said to be responsible for the present environmental crisis the global system is contending with. Because of the need for the polluters not to pay for the damage caused by their economic development path, they contended that anthropogenic effects of climate change could not be substantiated. Small state is dangerous, more so when it is strategically located. Lesotho, a small state within South Africa (SA), but of more importance to the Pretoria government in the era of climate change as the state is a source of water supply for the industrial heart-beat of South Africa which implies that the effects of climate change in the state will have direct influence on the survival of the relatively industrially developed neighbor. As much as solutions to climate change is a global approach, there is a need for Lesotho to put in place domestic policies and parliamentary acts, expectedly in line with South Africa's for sustainable development. Degree of vulnerability and sensitivity of the two states brings about this paper and its linkage to the concept of complex interdependence in the era of globalization.

Keywords: climate change, Lesotho, South Africa, complex interdependence, development.
JEL Classification: Q54.

Introduction

In today's world, where climate change is indisputably a global challenge – and also impacting not only natural resources but economies and societies (UNDP, 2013, p. 1), governments everywhere have continued to concern themselves especially with domestic actions and strategies aimed at mitigating and adapting to climate change. These moves at least serve to complement the ongoing international efforts at finding workable solution to climate change as a global common. However, interfacing climate change with local governance has particularly remained a crucial challenge confronting most developing countries; given their relatively high vulnerability to climate change, as well as low mitigation and adaptive capacity to respond to it.

For Lesotho, the situation is best described as crucial not only because of its poor development status, but also because the overwhelming scientific consensus indicates that the impacts of climate change on developing countries (many of which are in Africa) will be of particular severity. For this reason, Maseru, much like South Africa (SA) but certainly not with equanimity, is highly vulnerable to climate change and equally has low(er) adaptive capacity to it. The scenario is further exacerbated by its cruel realities both as a small and geographically disadvantaged state – the southern most landlocked country in the world completely surrounded by South Africa. Besides, its geographical location makes it naturally vulnerable and sensitive to economic and political vagaries in Pretoria (Amusan and van Wyk, 2011, p. 38; Taylor, 1997, p. 83).

With a population of slightly over two million and a relatively poor economy that is largely agrarian (including both crop and livestock) and also dependent on climate, with water playing a prominent role, the interactive impacts of climate change on Lesotho's socio-economic and ecological phenomena are better imagined. While subsistence agriculture serves as a source of Lesotho's food security and water as a source of energy for local industrial and domestic needs, electricity generation, as well as export to South Africa, these two climate-ramified sectors together generate significant national income for the Government of Lesotho (GoL).

Given the situation, it has become imperative to assess Maseru-Pretoria relations in the era of climate change and sustainable development. In doing so, this article specifically interrogates climate-induced agro-water stresses in Lesotho vis-a-vis their socio-economic implications and how they interconnect with developmental issues in South Africa – its territorial landlord.

Thus, relying on Keohane and Nye's complex interdependence and review/analysis of relevant documents, the overall aim of this article is to generate evidence-based analysis for improved and sustainable mutually beneficial bilateral relations between the two territorially-knit countries through appropriate climate change policy reforms and strategies. Whereas the specific objectives include: (1) To deepen understanding of climate change-induced agro-water stresses in Lesotho vis-a-vis the attendant socio-economic problems; (2) To explore their in-

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terdependent connections with developmental issues in Pretoria; (3) To suggest appropriate climate change policy reforms and strategies for improved and mutually beneficial Maseru-Pretoria relations.

1. Methodology

This article operates at theoretical level based on analysis and adaptation of the core thesis of complex interdependence to systematically explain the complex nature of climate change and its multidimensional interactions with socio-economic and environmental issues. Also captured within this theoretical framework is the essence of interdependent cooperation as regards climate change-related issues within the confines of institutionalized bilateral relations involving Lesotho and South Africa as contiguous neighbors. Details in this regard shall be provided in the section of this article that examines complex interdependence and its relevance.

On the other hand, and especially to complement the analysis/adaptation of complex interdependence, this article reviews and analyzes existing documents containing information with particular relevance to the study area being investigated. Hence, it relies extensively on secondary data and qualitative analysis. Basically, the data sources include government publications, grey and patent literature, journal articles, and materials from the internet. While government publications were accessed electronically through official websites, grey and patent literature were largely hand searched. Similarly, the journal articles and internet materials were accessed using keywords, subject headings and phrases relevant to the study focus from academic databases such as Google Scholars, JSTOR and Web of Science. Lastly, the search limits cover mostly recent publications.

1.1. Complex interdependence and its relevance. The intention in this section is to provide analysis of the key theoretical propositions of Keohane and Nye's complex interdependence, with a view to adapt them to local situations vis-a-vis issues of concern in this article. Thus, underlying its basic assumption is the argument that climate change-induced agro-water stresses in Lesotho and their possible interactions with situations in South Africa can be modelled as complex interdependence important enough to engender a form of institutionalized bilateral cooperation involving the two states.

As an important variant of liberal perspectives, complex interdependence developed from a deliberate attempt to challenge the theoretical inadequacy of classical realism. The realists' view of international system as 'anarchical' and therefore 'self-help' (Griffiths, 1999, p. 31), brought about the notion of complex interdependence between and among states with its main focus on conditions of political processes including issue-linkage, agenda and the role of international organizations as facilitators of inter-state cooperation (Keohane and Nye, 1987, p. 738). It is important to note that inter-state relations take place at different levels – bilateral and multilateral (including sub-regional, regional and global).

According to Keohane and Nye (1987, p. 731), "complex interdependence refers to a situation among a number of countries in which multiple channels of contact connect societies (that is, states do not monopolize these contacts); there is no hierarchy of issues; and military force is not used by governments towards one another". Keohane and Nye's analysis reveals that complex interdependence is underpinned by three basic assumptions: (1) actors other than states constitute a critical element in shaping a state's policy instruments; (2) state policy goals are not arranged in stable hierarchies, but are subject to trade-offs; (3) military force is largely irrelevant.

In particular, with regard to issue-linkage vis-a-vis complex interdependence, Keohane and Nye specifically illustrated their analysis using marine and international trade/monetary affairs as key examples of issues degradingly described as 'low politics' as against the realists 'high politics' (military security and nuclear deterrence). However, it is acknowledged at least implicitly that these two aspects are not exhaustive, and as a matter of fact Keohane and Nye (1987, p. 727) indeed made specific reference to the importance of multidimensional nature of socio-economic and ecological interdependence. This no doubt directly relates to climate change raised in this article as a global common, as well as agro-water stresses and other socio-economic situations associated with it.

This linkage is at least premised on the general perception that: (1) climate change constitutes an 'issue-area' of global concern that has continued to pose as much threat (ecological) as war to the contemporary global system; (2) climate change is complex and interacts with other socio-economic and environmental issues; (3) climate change directly challenges sustainable development, and indeed constitutes one of the focal principles of Sustainable Development Matrix (SDM)[1].

To be more explicit on these points, some important analysis may be relevant. On the first point, for instance, Griffiths (1999, p. 186) points out that outcomes resulting from conditions of political processes involving many states will be determined

[1] See details in UNDP (2013, p. 2).

by the distribution of resources and vulnerabilities at particular issue-areas. His exposition, and that of Gourevitch (1978, p. 893) that countries differ in global issue areas according to their sensitivity and vulnerability, merely reinforces the original position of Keohane and Nye (1987, p. 186) that "complex interdependence strengthens the need to focus on particular sensitivities and vulnerabilities of actors in specific issue-areas". Needless to state that this article is brought about by the extreme though varied degree of sensitivity and vulnerability of Lesotho (as a Least Developed Country [LDC]) and SA (as a developing state) to climate change.

As regards the remaining two points, many scholars in their different explanations unanimously affirm that climate change interacts with political, economic, social and environmental factors (Amusan, 2010; Karl and Peterson, 2009; Stern, 2006). The LMS (2001) put it more succinctly that "The impact of climate change will directly and/or indirectly affect human welfare and sometimes undercut the efforts to promote sustainable human development and environmental recovery". The fact also remains that climate change has continued to provoke the need for cooperation at all levels (bilateral and multilateral). The most feasible in recent times being at the global level through institutionalized arrangements such as the United Nations Framework Convention on Climate Change (UNFCCC), Kyoto Protocol, and the Conference of Parties (COPs)[2].

On the role of institutions in facilitating inter-state cooperation, Keohane and Nye (1987, p. 738) view international organizations as "entities that instutionalized policy networks and within which transgovernmental policy coordination and coalition-building could take place". Shedding more light on this, Martin (2007, p. 111) argues that international institutions provide multilateral platforms through which states deal with collective-action problems that threaten stable pattern of cooperation, together with performing coordination and monitoring roles. By performing these roles, she concludes that international institutions become "valuable foundation" for international cooperation.

Keohane and Nye's analysis of complex interdependence is no doubt underpinned by the assumption of states as rational actors/agents that at all times seek to maximize the highest optimum gain given the costs and benefits of different courses of actions and preferences open to them. It is noteworthy that the rationality model as proposed forms the theoretical basis upon which an improved Maseru-Pretoria relations aimed at evolving a collective action to address the common problem of climate change, especially likely agro-water issues and other socio-economic challenges associated with it, is envisaged. In the circumstance, and also considering the weight of the issues involved, Maseru and Pretoria are more likely to act rationally given their closed-knit contiguity as well as evolve strategies to guide their actions. Significantly, it is also presumed that the asymmetrical power relations between the two, especially in economic and political terms, will marginally affect their patterns of behavior towards a collective action with regard to the issues being investigated.

This expectation is at least supported by the argument in line with the philosophy of complex interdependence that conditions of inter-state relations will be unrelated to the distribution of military power, and that transnational relations will be crucial factors in the decision-making process, including international coalitions and non-governmental institutions (Griffiths, 1999, p. 186). Also, underlying the importance of such collective action is the argument that states and their fortunes are inextricably tied together in a complex interrelationships involving many actors – states and non-state entities – in the world politics (Keohane and Nye, 1987; Powell, 1994). Hence, the need for interdependence theory in explaining states' relations is to achieve all unattainable in isolation. This, according to Grieco (1988, p. 490), suggests that in a world of multiple issues imperfectly linked, in which coalitions are formed trans-nationally and trans-governmentally, the potential role of international institutions in political bargaining is greatly enhanced.

Yet there are issues to arriving at such mutually beneficial bargaining at least as evident in some of the criticisms directed at liberalism generally on the one hand, and experiences from the negotiation crisis that seems to have remained a perpetual feature of the seemingly unending meetings of the COPs as far as the global climate change process is concerned. The problem according to Keohane and Nye (1987, p. 730) centres on the question of "how to generate and maintain a mutually beneficial pattern of cooperation in the face of competing efforts by government (and nongovernmental actors) to manipulate the system for their own benefit". They specifically emphasized that "interdependence generates classic problems of political strategy, since it implies that the actions of states, and significant non-state actors, will impose costs on other members of the system".

[2] While the UNFCCC Earth Summit held in Rio de Janeiro, Brazil presents the first most globalized institutional arrangement aimed at addressing the problem of climate change, the 1997 Kyoto Protocol stipulates mandatory GHG emissions reductions targets for annex I countries. The Conference of Parties constitute the administrative arm of the UNFCCC/KP that meets annually to make and adopt decisions aimed at promoting the objectives of the Convention.

While acknowledging this challenge, a degree of optimism that motivates the likelihood of a cooperative action between Maseru-Pretoria with regard to the issue-area being discussed is directly inspired by Skyrms' (2004, p. 2) analysis in his Stag Hunt game theory though implicitly that achieving cooperation in inter-state relations involving two states is a lot easier than those involving many states. Admittedly, stag hunt game shares some theoretical tenets with complex interdependence at least to the extent on the one hand of Keohane's (1984, p. 68) proposition that "Not all situations in the world politics or international political economy take the form of Prisoners' Dilemma, but many do", and on the other (as noted earlier in this article) the fact that Keohane and Nye assume a degree of consistency between cooperation and individual states' rationality, even though they emphasized that interdependence would not necessarily lead to cooperation (Keohane and Nye, 1987, p. 730; Martin, 2007, p. 10).

Granted that complex interdependence recognizes the important role of non-state actors as crucial factors in the political processes and bargaining between and among states, this article though focuses primarily on Lesotho and SA makes significant references to multilateral arrangements, especially at the Southern African sub-region level that connect the two states, as well as other relevant stakeholders in the envisaged bilateral climate change process. Apart from the South African national Department of Environmental Affairs (DEA) and Lesotho Meteorological Services (LMS) both representing administrative lead agencies on climate change in the two states respectively, and as such formal transgovernmental channels of interactions, important mention was made of the Southern African Customs Union (SACU) and the Southern African Development Community (SADC) as key examples of multilateral multilateralism.

And lastly in this section, it is important to note that Keohane and Nye (1987, p. 731) acknowledge that complex interdependence may not faithfully reflect world political reality, and at best represents an ideal type that is socially and environmentally determined. It is on this note that this article considers it important and very pertinent to build on the complex interdependence framework by reviewing relevant documents pertaining to the issue-area under focus.

2. Literature/document review

The review of literature and other relevant documents in this article is tailored along two thematic areas relevant to guide analysis of the main issue under focus. These include an overview of Lesotho as a small state but strategically important and dangerous, as well as climate change and its impact on agro-water and other socio-economic issues in Lesotho.

2.1. Lesotho as a small but strategically important/dangerous state. Not few studies have examined the peculiarities of Lesotho both as a small – economically poor and mountainous – state, and landlocked entirely within SA (Mwangi, 2010a; Faye et al., 2004; Taylor, 1997). This article does not intend to add anything new in this regard, save for rationalising its choice as the epicentre of its analysis.

Lesotho is indisputably a resource-poor enclave, entirely situated within the South African territory. Lesotho is not the only landlocked state in the world; neither in the entire African continent nor in the Southern African sub-region. Faye et al. (2004), for instance, captured it more comprehensively in his compilation of virtually all the landlocked states in the world, even though his analysis was informed by economic orientation and as such focused specifically on the varied challenges facing landlocked states in their trade relations with the outside world. Interestingly in this regard, in addition to the challenge of distance from coast, he explicitly accounts for other aspects of their challenges which include dependence on: transit neighbours' infrastructure, cross-border political relations; transit neighbors' peace and stability; and, transit neighbors' administrative practices.

Casting a different look on the same issue, Taylor's (1997) analysis centres on Lesotho's subordinate relationship with SA as a 'captive state', together with its fellow South African landlocked states back in the days of apartheid. He represents the common view that their landlocked status naturally provides for their economic and, to some extent, political integration with Pretoria. It needs not be pointed out that Lesotho is perhaps more than others extremely vulnerable to SA's machinations. Unlike its fellow South African landlocked states, Swaziland and Botswana[3], the most intriguing feature of Lesotho's *landlockedness* remains the fact that it is surrounded completely by SA.

Mainly because of its unique yet harsh geographical contiguity and therefore resource poverty at least in relative terms, Lesotho is categorized as one of the Least Developed Countries (LDCs) in the world with extremely low human development index (HDI). Although this may not be so peculiar to Lesotho, but LDCs generally. Faye et al. (2004, p. 33) observe that "Overall, the landlocked countries do worse than their maritime neighbors in each component of the HDI". According to him, "The average

[3] Other Southern African landlocked states include Zimbabwe, Zambia and Malawi. The basis for understanding the "landlockedness" of a state is underpinned by its lack of direct access to a dependable all-weather international sea route. For more on this, see for instance Faye et al. (2004, pp. 40-49).

Gross Domestic Product (GDP) per capita of landlocked countries is approximately 75% that of their maritime neighbors". A more recent statistics specifically on Lesotho vis-a-vis each of the HDI's component indicates: income per capita of $2,798; HDI Rank of 162nd; thirty seventh (37th) most vulnerable; and, Extreme Events Rank of 127th (Anon, 2013, p. 2).

Given the situation, Maseru's strategy, as ever, will be that of survival; since it would be naive to contemplate that it could escape the consequences of any disruption of the economic and political life of its geographical landlord. Kotsokoane (1969, p. 138) seems to capture the scenario more perfectly when he jokingly remarked, "If South Africa ordered all Lesotho's citizens out of her territory, one would experience a political and economic upheaval of no mean proportions". Besides, the fear of possible untoward repercussions would again imply that Maseru unlikely antagonizes Pretoria in any given circumstance.

Hence, it is not surprising that apart from the bilateral relations, there exists a number of institutional linkages between Pretoria and particularly her contiguous small neighbors. These include the Southern African Development Bank, Multilateral Development Council formed independently in 1982 by SA, and the SACU[4]. To date, Lesotho and its fellow South African landlocked states are economically tied up with SA in a common currency and customs regime under the SACU, which dates back to the colonial era in 1910 (Bischoff, 2003, p. 135). Apart from agriculture, water, and lately manufacturing (thanks to the African Growth and Opportunity Act, AGOA)[5], Lesotho currently depends on relatively substantial receipts from the SACU. Not to mention, in addition, their common allegiance to the SADC.

Although the economic interdependence of Maseru-Pretoria relations takes pre-eminence over other aspects, it is worth mentioning that Lesotho is almost entirely at the mercy of SA concerning the transit of goods and people to and from transboundary frontiers due to its *landlockedness*. As it would be expected, SA controls all channels of Lesotho's trade with the outside world, especially as it relates to road and rail transport systems. The tendency also remains that the existing historical, traditional and cultural affinities between the *Basotho*[6] on both sides of Lesotho-South African border could either be strengthened or impaired as the case may be, considering a number of inter-personal activities that frequently link them together; their artificial territorial separation notwithstanding (Cukwurah, 1983).

Undoubtedly, Lesotho's economy is largely agrarian. Hence, agriculture at least at the subsistence level remains a major source of livelihood for the vast majority of households in Lesotho. The LMS (2001) contends that the sector is critical to the socio-economic aspects of the country's national life with an estimate of 85 per cent of the population in the rural areas and still majority of the rural households (about 70 per cent) subsisting on farming and livestock. This view is equally shared by many others though in different perspectives. For instance, Nyane (2013, p. 8) contends that agriculture constitutes the gravest vulnerability in Lesotho while the likes of Silici et al. (2011) and Setbasi (2013) are of the common view that the average contribution of agriculture to Lesotho's GDP has continued to decline, and food security and poverty remain key challenges facing the country.

Although Silici et al. in their analysis point out that the situation has improved with the practice of conservation agriculture locally called *likoti* which is more ecologically friendly, the low productivity may not be unconnected with Nyane's (2013, p. 15) revelation that farming in Lesotho is largely rain-fed since less than 1% of arable land are under irrigation. More specifically is the LMS's (2001) position that "erratic climatic conditions, limited arable land, and fragile soils with a low water holding capacity have proven to be detrimental to crop production in Lesotho, with the result that agriculture has become an increasingly risky economic activity in recent years". The estimate according to the Central Bank of Lesotho (CBL, 2011) that the value added by the agricultural sub-sector contracted by 1.8% in 2011, compared with an acceleration of 10.9% in 2010 speaks volume regarding the current situation.

However, of strategic importance is Lesotho's natural and rich endowment in water resources at least in the relative terms; the country is entirely situated within the Orange River Basin, with its main tributaries being the *Senqu* in Lesotho, the Vaal in SA and the Fish in Namibia (Mwangi, 2010a, p. 50).

[4] The argument in some quarters is that these institutional linkages symbolize Pretoria's long-term objective of what is commonly referred to as a "constellation of Southern African States", which to a large extent has now been achieved. See Robert M. Price (1984, pp. 14-16).

[5] Findings reveal that AGOA provides stimulation to the Lesotho's clothing industry through the production and export of apparel to the US and Europe, which in turn generates a measure of Foreign Direct Investment (FDI) as an important addition to the Lesotho's national income. See Sanjaya Lall (2005, p. 1005).

[6] Basotho are the people of the *Sotho* origin that live on both sides of Lesotho-South African border, particularly the north-eastern Lesotho and a larger part of the South African Free State; who apart from sharing similar historical background and speaking the same language, *Sotho*, are also bounded by several traditional and cultural connections like diet, marriage, religion, etc.

Water plays a crucial role as a major contributor to Lesotho's economy. Water in Lesotho not only serves local industrial and domestic purposes and as a major source of energy generation, but also as an important source of the country's national income through export to some major parts of South Africa from the Lesotho Highlands Water Project (LHWP)[7]. With the completion of its first phase namely, the Katse and Mohale dams, assisted by the World Bank and African Development Bank, Lesotho is clearly almost completely self-sufficient in the production of electricity and generate substantial national income from the sale of electricity and water to South Africa. Nwangi (2010b, p. 41) revealed that royalties from water and project-related customs dues account for approximately 28 per cent of Lesotho's Gross Domestic Products (GDP).

2.2. Climate change and related agro-water stresses in Lesotho. Scholars and non-scholars, including political leaders, civil rights and environmental activists, unanimously agree that climate change is a global phenomenon; its negative effects no doubt vary from region to region and from one country to the other[8], and also that it is multi-dimensional in nature. Besides, it is a scientific consensus that the rich industrialized countries are the major contributors to the anthropogenic climate change[9], and also the least affected by its dangerous impacts because of their relatively high mitigation and adaptive level technologically, while the reverse is the case regarding the poor developing countries of the world, with larger concentration in Africa.

Moreover, it is clear that the developing countries in Africa, lack the capacity to mitigate and adapt to climate change; albeit with some variations. Related to this, is the common view that the continent's vulnerability arises from a combination of factors, including extreme poverty, high rate of population increase, frequent natural disasters such as droughts and floods, and agricultural systems (both crop and livestock production) that depend heavily on rainfall (Africa Governance Institute [AIG], 2014; UNDP, 2013; Adano and Daudi, 2012; Mwiturubani and van Wyk, 2010; IPCC, 2008 and 2007).

The United Nations Framework Convention for Climate Change (UNFCCC) categorized Lesotho as one of the countries highly vulnerable to the adverse impacts of climate change, and therefore deserving special attention (LMS, 2001). More specifically, it is acknowledged that the country's vulnerability to climate change largely emanates from the wide prevalence of poverty. Related to this, Silici et al. (2011, p. 139) contend that Lesotho is a risk-prone environment where the scarcity of natural resources is both a cause and consequence of poverty. Setsabi (2013, p. 15) pushed it further that food security and youth unemployment constitute two key development challenges facing the country's economy, and that climate change will likely have exacerbating ramifications on both challenges.

Also, from geographical point of view, it is rightly observed that Lesotho's geographical location in particular is such that exposes the country to both the warm Indian Current from the Indian Ocean and the cold Benguela Current from the Atlantic Ocean; the combined effect resulting into a wide variability in both rainfall and temperatures (LMS, 2001). The country' geographical location is further worsened by its rugged topography which makes it prone to spectacular natural disasters.

Specifically, predictions relating to the impacts of climate change indicate that Lesotho will become warmer due to increase in seasonal mean temperature, and also that precipitation will diminish relatively to the most vulnerable ecological zones of the country. By implication, these will be accompanied with extreme events like frequent droughts, floods, soil erosion, frost, hail, rainstorms, strong/storm winds, heat waves, cold snaps, which together portend major ramifications for agriculture and water in particular, and other developmental issues in general (UNDP, 2013; Anon, 2013). In connection with the prediction, Silici et al. (2011) observe that the complex interactions of climate change with socio-economic factors and environmental constraints are steadily reducing agricultural productivity and output, particularly with regard to the dominant crop (maize) which according to them had since the mid-1970s fallen in yields from an average of 1400kg/ha to 450-500kg/ha in most districts.

The livestock sub-sector is also not spared at least from the exposition of the LMS (2001) that due to loss of nutritious climax grass variety resulting from delayed precipitation, climate change portends serious consequences for productivity in the livestock sub-sector which contributes an average of 55% to 65% of agric output in any one year. Anon (2013, p. 4) reveals that the livestock sub-sector has already been impacted with chronic drought limiting the carrying capacity of pastoral lands and therefore resulting into loss of large number of livestock.

[7] The LWHP is ranked as one of the largest water transfer schemes in the world, designed to capture, store and transport water from the Orange River System to South Africa's Free State and some major parts of Gauteng Province following a treaty signed between Maseru and Pretoria in October 1986. For more, see Mwangi (2010a, pp. 50-51).

[8] Although for the most part climate change is predicted to have negative and dangerous effects, it is established that countries in relatively cool regions of the world – still the developed countries – will likely benefit from warming, while countries in relatively warm regions of the world – still the developing ones – will be endangered by the warming. See, for instance, Robert Mendelsohn et al. (2006, p. 161).

[9] The term anthropogenic climate change refers generally to changes in the climate resulting from human activities as against natural processes. For details, see UNDP, 2013, p. 1; IPCC (2008, pp. 5-6).

Future predictions for the water sector indicate a reduction in both surface and subsurface runoff due to anticipated reduced or delayed precipitation with an average of about 60 per cent loss per year. While Kranz et al. (201) assert that the impacts of climate change on large river basins are projected to be particularly drastic in Southern Africa generally, Nwangi (2010a) locates his analysis specifically on the negative impacts of climate change on water resource in Lesotho. Specifically, it is established that perennial springs in Lesotho have already run dry due to droughts (Anon, 2013; UNDP, 2013; Mwangi, 2010b; LMS, 2001).

Given the current population growth rate and levels of service, it is argued that the climate-induced water stress period could be reached earlier than predicted (Nwangi, 2010a, p. 40; LMS, 2001). Coupled with the fact that over 95% of electricity consumed in Lesotho is generated from hydro-power (Anon, 2013, p. 5), the combined effects would mean: reduced yields of many water sources; dry up springs and wells; ecological disaster; hydroelectricity-related hiccups, reduced water and electricity export to South Africa and, in turn, a proportionate reduction in the Lesotho's national income due to revenue cut from direct sale of water and electricity; as well as more stresses for many water-based socio-economic activities, especially for rural communities whose activities depend largely on availability of fresh water.

The cumulative effects of climate change will result in land degradation and desertification, threaten national food security[10], exacerbate general poverty due to water and food shortage, induce increased youth unemployment, motivate rural-urban drift and forced trans-border migrations, high incidence of HIV/AIDS and other curable/terminal diseases often associated with poverty, hunger and suffering. The scenario may also imply increased crime rates, other agro-water induced human conflicts and social violence, and ultimately political instability[11]. In sum, these adverse climatic conditions will undermine the socio-economic development of Lesotho and therefore general well-being of its citizens, which to some extent is currently the case.

Linked to the efforts to addressing the situation, the GoL has in place a number of climate change related regulations such as the Lesotho Environmental Act 1998 and Lesotho Water Act 2008 (UNDP, 2013; Nwangi, 2010a; LMS, 2001). The GoL has also developed specific national climate change programs like the National Adaptation Programs of Actions (NAPAs), Lesotho's National Strategic Development Plan (NSDP) 2012-2016 with the requirement that development goals be delivered in a climate resilient manner, and so on. Also, as a poor resource country and more importantly a party to the UNFCCC and Kyoto Protocol, Lesotho has attracted a number of climate change adaptation supports from international institutions, as well as individual countries mostly the developed ones; either as part of sustainable development initiatives and programs or direct climate change mitigation and adaptation interventions (Anon, 2013; UNDP, 2013)[12].

However, like the situations in many developing countries and even developed states with few exceptions, Lesotho's overall national approach to climate change is basically "integrative" as against "dedicated[13]". This implies the integration of national climate change (mitigation and adaptation policies) and regulatory framework into the existing environmental and other related laws. As argued, Lesotho currently does not have a consolidated climate change policy and adaptation strategy despite the existence of a number of sectoral development policies (UNDP, 2013, p. 19; Nwangi, 2010a, pp. 41-42; LMS, 2001).

2.3. Implications for Maseru-Pretoria relations and policy recommendations. Based on the theoretical framework and document review, it is clear that climate-induced stresses in the agricultural and water sectors of Lesotho's economy will have multiplier effects regarding other socio-economic considerations as earlier pointed out. Also, the thinking in this article is that its connective ramifications may also likely touch on Maseru-Pretoria relations in some important aspects. At the official bilateral level, while the agricultural low yields may put additional pressure on Pretoria's food production level as a result of increased import demand from Maseru to complement local capacity and meet domestic consumption, the predicted climate-induced water shortage in the nearest future (effective from 2019-2062 *ceteris paribus*), coupled with the increasing

[10] Lesotho is currently not food-sufficient as it depends on food imports mostly from South Africa to complement local food production capacity.

[11] Food insecurity (with agriculture accounting for only about 10% of Lesotho's economy) and youth unemployment (estimated to be about 35%) have been identified as the two major developmental challenges currently confronting the GoL; with further inducement by climate change, the two factors remain a potential threat to the economic development and political stability of the country. See for instance UNDP (2013, pp. 4-5 & 15-17).

[12] These range from the United Nations Trust Fund for Human Security (UNTFHS); the UNFCCC's established Least Developed Countries Fund (LDCF) and Adaptation Fund (AF); the "Ireland's Bilateral Finance Lesotho" as earlier mentioned; the Africa Adaptation Program sponsored by the Japanese Government, to mention but a few.

[13] Climate change is pretty much presumed to fall naturally within environmental perennials, as such most countries have employed a range of integrative policy instruments in their respective national climate change mitigation and adaption approaches, while some few others like UK, Mexico, etc., have adopted instead a purely dedicated approach. For more on this, see Nachmany et al. (2014, pp. 9-22), GLOBE (2013, pp. 7-14), AWEPA (2012), Townshend et al. (2011).

population growth rate and current levels of service, portends a possible re-negotiation of the LHWP bilateral agreement between Maseru and Pretoria to allow the former strikes a diplomatic balance between meeting local water demands, as well as steadfastly pursuing its survival strategy as earlier noted.

Similarly, the exacerbation of the existing socio-economic challenges as a result of climate change signals a fierce battle for the GoL in achieving its sustainable developmental objectives. On the one hand, tackling agro-water stresses and related socio-economic challenges are problems that the state is contending with. This scenario presents Pretoria with a territorially contagious and possibly poor(er) tenant, with connective intricacies regarding the length and breadth of their political and socio-economic interdependence. Specifically, Pretoria may need to prepare for additional coping trans-boundary issues like forced labor migrations arising from poverty and hunger on the one hand and poor travel documents on the other; epidemic spread resulting from intra- and inter-tribal marriages, as well as other forms of inter-personal relationships, especially among the *Basotho* separated only by colonial geographical boundary delineation and demarcation; reduced trade and other trans-border economic activities; inter-personal conflicts and other security challenges amongst others.

Given the situation, and also acknowledging that the array of climate change related policies and measures currently operational in Lesotho are no doubt steps forward, it is required that the GoL immediately embarks on policy reforms to evolve effective climate change legislations. Also there is a need to strengthen institutional capacities of relevant national departments and agencies for proper enforcement, compliance, coordination and progress monitoring, as well as efficient agro-water resource management. This no doubt aligns with the growing call for a purely legislative and more collaborative approach in tackling climate change. More importantly, there is a need for a dedicated lead agency for effective coordination and monitoring of climate variability.

While there is a need to pay attention to the predicted climate-induced water stress in Lesotho, which no doubt calls for urgent proactive but fairly interdependent cooperative action on the part of the political leaderships of the two countries, the situation may not likely generate interstate conflicts as envisaged in some quarters (Nwangi, 2010a, p. 54), especially such that could impair Maseru-Pretoria relations. In this regard, and while not a sufficient solution, this paper suggests the need for the establishment of a South Africa-Lesotho Bi-National Commission on Climate Change to work on the identified stresses and any other climate change related issues of common concern. It may also be required that a joint Green Fund be put in place to mobilize funds through both public and private initiatives in their respective states to support critical climate change intricately connected programs of mutual interest, particularly in the agro-water sectors. This bilateral synergy, it is believed, will not only be of advantage to Lesotho, it will also aid SA's efforts at dealing with its climate change and in particular its climate-energy imbroglio[14].

Conclusion

Climate change-induced agro-water stresses not only present the GoL with a serious national challenge as an addition to the existing developmental issues, it also portends potential constrictions for Maseru-Pretoria relations. This needs urgent and proactive bilateral cooperative action in the form of a fairly interdependent arrangement. SA needs to appreciate industrial development in Lesotho as a means of addressing possible negative fall-out of climate change effects raised above. Appreciating a fact that "small is dangerous" in the era of global common will enhance pro-active solution to the crises accompany climate change effects raised in this paper. Setting up of bi-national commission, specifically for environmental issues will go a long way in the two states relations. Such international regime should be sponsored by SA, but not on unequal exchange. At the same time, SA should be ready to provide a free ride as a hegemon in the sub-region. Doing these will address unemployment, rural-urban movement and influx of Basotho from Lesotho to South Africa irrespective of colonially inspired international boundary and sovereignty. Perhaps, to address water supply from Lesotho, generation of electricity from Katse Dam may be revisited through supply of energy by the South African government. This paper is aware of strategic importance of water in international politics, but geography determines a state policy on this. Collaboration through interdependence is the solution to climate change effects between the two states.

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[14] South Africa ranks the second most energy-intensive economy in the world. See Del Weston "The Politics of Climate Change in South Africa" in Patrick Bond (2011, p. 142).

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