

**Assessment of Climate Change Impacts on Regional Security in Kenya:
A Case Study of Kajiado District**

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English Summary

This research has been conducted to examine the impact of climate variability, particularly drought on the regional security in Kenya. Throughout the field research in Kajiado District, Southwestern part of Kenya, it was found out that prolonged drought in this decade has been creating various problems and conflicts in the local society depending on pastoralism and rain-fed agriculture. Inter-boundary migration/immigration of pastoralists to access to pasture and water have been increasing due to drought, however the increased migration have been accelerating conflicts for limited resources with local people and governments. Drought is not temporary issue anymore, but continuous risk to Arid and Semi-Arid Lands in Kenya, that cover about 80% of the total land mass and are home to about ten million people in the country.

Throughout the field research, it was found that some solutions mitigating the risks of drought have been implemented by the governmental organizations and local communities, however there has been a negative cycle; the solutions themselves have been creating another problems or conflicts and make the region more vulnerable. However, the governmental organizations cannot intervene this negative cycle effectively. Also the governance structure for preventing the risk of climate change in Kajiado County has not been working efficiently or sufficiently. Many key informants of the government organizations emphasized that Kajiado is more vulnerable to the drought risks than other neighboring counties due to the lack of governance, infrastructure and resources, despite the country is neighboring Nairobi and does not experience inter-tribal conflicts with firearms. Most informants of local people also emphasized there has been no support from governments to mitigate the risk of drought after 2009, the most severe drought hazard, and told they are "neglected" from the government. It was found out that it is necessary to understand 2 things; 1) drought is becoming the risk for more stakeholders' security and 2) governance is a key to mitigate the risk of climate variability. More comprehensive analysis/policies and long-term strategy will be needed to break the negative cycle of risks of climate variability.

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Japanese Summary

近年ケニアでは深刻な旱魃が慢性化しており、資源（水や牧草地）の減少や枯渇が国境やコミュニティの伝統的境界線を越えた人の移動を加速させ、また限られた／縮小する資源や家畜をめぐる遊牧・放牧民同士の紛争も増加している。報告者は2014年12月～2015年3月にかけてケニア・ナイロビ大学を訪問し、ケニア南西部のカジアド県（Kajiado County）を事例として、旱魃が紛争を引き起こす／深刻化させるメカニズムについて、特にガバナンスの面に着目して検証を行った。

ケニアでは国土の83%（約49万km²）を占める乾燥地および半乾燥地（Arid and Semi-Arid Lands: ASALs）に人口の約25%（約1,149万人）が居住しており、その多くが放牧によって生計を立てている。本研究における調査対象値であるカジアド県は、ケニア南西部、タンザニアとの国境部に位置する行政区である。面積は21,901km²であり、その大半が半乾燥地域（Semi-arid Area）である。カジアド県の主な産業は牧畜業であり、人口の約50%が従事し、90%以上の土地が牧畜業、特に放牧に利用されている。カジアド県の平均年間降雨量は685mm（327～1576mm）であり、基本的な降雨期としては、3月～5月に長期の、11月～12月に短期の雨期が訪れる。しかしここ2000年以降の年別降雨データを参照すると、降雨量および降雨期ともに一定しておらず、特に2014年の降雨量は2009年～13年の平均雨量に比べて、3月～5月は25%、11月～12月は55%と、例年に比べて極めて少なかった²。

カジアド県では民族間対立、銃火器の蔓延、難民の流入などの治安不安定化は発生していないものの、調査を進める中で、他のASALsと同様に近年の旱魃その他の気候変動が、牧畜に依存する地域社会において様々な紛争を引き起こしていることが明らかになった。例えば、牧草地と水にアクセスするため、牧畜民の国境や伝統的境界線を越えた移動が旱魃によって増加している³が、このような移動は地元の人々や政府との限られた資源をめぐる紛争を加速させている⁴。また、資源を求めて頻繁かつ広範囲にわたっての移動が必要となるため、1つの地域に定住できないことが、牧畜民の生計の不安定化、医療や教育へのアクセス欠如といったリスクをもたらしめている。

カジアド県の政府職員や地域コミュニティのリーダーを対象とした調査から、同地域では旱魃リスクの予防および対応のためのリソースが極めて限られていることが明らかになった。具体的に挙げられたのは、①気候変動対策に関する制度・政策、投資の欠如および不足、②人員や設備を含めた災害予防・対応のための資源の不足、③情報やアウトリーチの限定性-などである。さらに、カジアド県における貧困率は47%（ケニア全体では46%）、1999年～2009年の平均人口増加率は5.26%（ケニア全体では2.64%）と、開発や資源配分の側面からも気候変動リスクに対する脆弱性が高いことが分かる⁵。

このように、カジアドでの調査を通して、気候変動がもたらす種々のリスクの直接的、間接的、双方向的な連関によって、地域安全保障が不安定化していることが明らかになった。また、ある国や地域の気候変動に伴う諸リスクの予防や対応について検証する際は、環境面での脆弱性と同時に、ガバナンスなど人為的側面にも注意を払う必要があることも分かった。東アフリカ地域での旱魃はもはや慢性的なものであり、これまでの緊急的な人道援助を中心とした対応では状況を改善することは難しく、より中長期的な開発を通じた旱魃への対応能力（レジリエンス）を強化する必要があるといわれる。気候変動がもたらすリスクを低減させ、安定的な地域安全保障を構築していくためには、ガバナ

² National Drought Management Authority, Early Warning Bulletin of Kajiado County, January 2012 – February 2015, http://www.ndma.go.ke/index.php?option=com_k2&view=itemlist&layout=category&task=category&id=5&Itemid=144 (2015年3月31日閲覧)

³ 牧畜民のインフォーマントのうち78%が、旱魃の深刻な時期に家畜のための水や牧草を求めて、国境や伝統的な境界線を越えて移動した経験があると回答した。直線距離で250km以上離れたモンバサまで移動したとの回答も複数寄せられた。

⁴ 具体的な回答としては、家畜の盗難、家畜の疫病の蔓延、過剰飼育、過放牧、自然保護区域や自然公園への「侵入」に伴う警察等とのトラブル等が挙げられた。

⁵ 国際協力機構「貧困プロフィール：ケニア」http://www.jica.go.jp/activities/issues/poverty/profile/ku57pq00001cu1nq-att/ken_2013_Jreport.pdf (2015年3月30日閲覧); Kenya Commission on Revenue Allocation, Kenya Country Fact Sheets Second Edition, 2013.

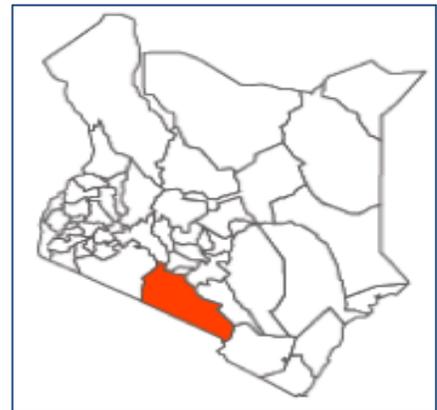
ンス面にも十分に着目し、より包括的かつ長期的な解決策を策定・実施していく必要がある。

1. Introduction

This research has been conducted for 3 months to examine the impact of climate variability, particularly drought on the regional security in Kenya. The overall objective of the research is: to examine the impacts of climate change on regional security in Kenya (with special reference to the Kajiado County) and the effectiveness of governance mechanisms in place to address climate change impacts and regional security. Also there are 4 specific objectives: 1.To examine indicators of climate change in Kajiado County. 2.To assess the impact of climate change on the regional security in Kajiado County. 3.To assess the governance structure that prevents the risk of climate change on the regional security and conflict in Kajiado County. 4.To assess the effectiveness of local governance in Kajiado County mitigating climatic risks.

2. Study Area

To conduct the research according to the above objectives, Kajiado County, Southwestern part of Kenya was selected as a research field. There are four reasons for the selection of Kajiado as a field. First, Kajiado is considered as the semi-arid area and is highly depend on the pastoralism (52% of population, geographically more than 90% of the land is utilized). Second, this area has been experiencing various risks intensified by climate variability as well as other arid area in Kenya, even though the security risk is much lower than other region in the country. Third, this county is neighboring to Tanzania and it is relevant to research on inter-boundary migration/immigration. Forth, the security concern and accessibility were considered. This county is neighboring to Nairobi and it is quite easy to access without hiring secure vehicle or driver. Also this county does not have the problems of firearms, terrorism, refugees and easier to conduct field research.



3. Methodology

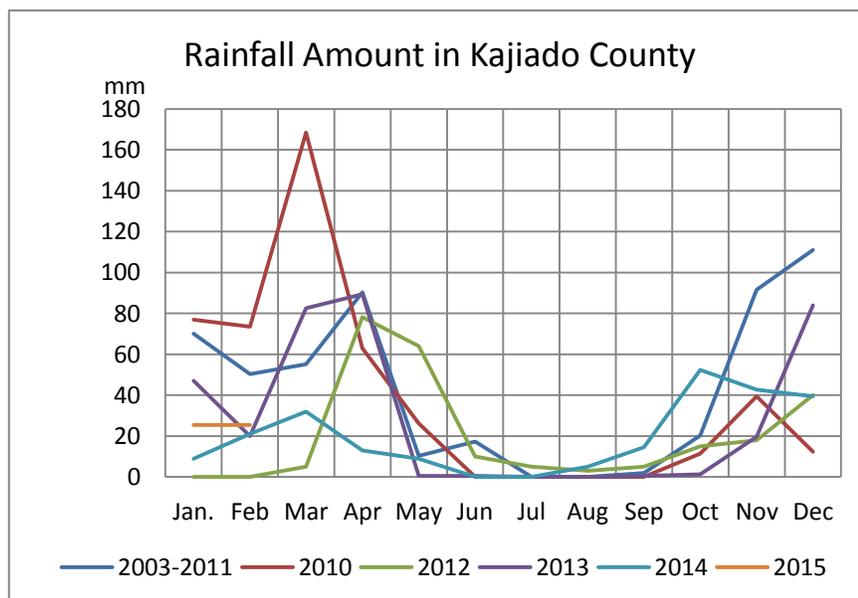
- Reconnaissance Study
- Specification of Research Design
- Sensitization of the study, mostly among key informants in the governmental organizations
- Recruitment & training of the research assistant who can translate English and Maasai language, and has basic knowledge on climate change
- Field Survey in Kajiado: 9-13, 16-17 February, 9-10, 16-17 March 2015
- Interview and participant observation: 21 key informants and 26 local people.

- 2 Focus Group Discussions: one with six male informants and two with six female informants. According to the supervisor, it is important to differentiate FGDs along gender line since female tend to hesitate expressing their opinion in presence of men in the local context.



4. Research Findings

Unstable rainfall in Kajiado



As mentioned above, 80% of the land in Kajiado is an arid & semi-arid savanna. The annual amount of rainfall in the county is averaging 685 mm (range 327-1576 mm) and there are two rain seasons. Short rain season is during November to December ($30.97 \pm 27.85\%$ of the annual total), and long rain season is during March to May ($47.5 \pm 15.06\%$ of the annual total). According to the meteorological data, it is obvious that rainfall pattern and amount has been highly unstable.

Prolonged drought and its risk

Unstable pattern and recent low amount of rainfall in Kajiado has been creating prolonged drought. According to the existing researches and interview, there has been some timing of severe droughts since 2005. For instance, households in Kajiado lost 60%-80% of their cattle and 25%-30% of their goats and donkeys from lack of water and pasture due to the drought during 2005-2006. 60% of livestock of the county died due to 2009 drought, the worst one in the decade. Also the droughts in 1999-2000, 2004 and 2014-15 have been heavy, according to the County Director of Ministry of Livestock.

Prolonged drought has been reducing the income of households depending on pastoralism. According to the interview to the local pastoralists, price of young male cattle has been reducing to 14,000 to 15,000 Kenya Shillings in early 2015 from 30,000 to 33,000 KSh in 2014. All the informants using the private water-tank are paying 5,000 KSh per month and the fall of the price of livestock is threatening the basic needs of the pastoralists, such as access to education or medical care. According to the Ministry of Public Health, reduction of the income is now forcing young female to work in sex industry and it is causing the expansion of HIV and other diseases, and sexual violence. Therefore it can be said that prolonged drought has been destabilizing public health in Kajiado and other ASALs in Kenya.

Migration / Immigration due to prolonged drought

Prolonged drought has been intensifying pastoralists' inter-boundary movement in search of shrinking resource; water and pasture for their livestock. However the movement creates various problems such as livestock theft, disease expansion of livestock, conflict on limited natural resources with local residents or other pastoralists. Some pastures had to sneak into the fenced area to get water and pasture in the night and some informant told they have been



arrested due to "invasion" to the national reserve are for pasture and water. Migration trends also

increase vulnerability to abuse and human trafficking especially among children and the youth. In other ASALs in Kenya, underlying inter-tribal or ethnic tension and influx of firearms have been making such problems more violent.

Negative Cycle

Some solutions mitigating the risks of drought to security and economy have been implemented by governments or local people voluntary, however there has been a negative cycle; the solutions themselves have been creating another problems or conflicts and make the region more vulnerable. For instance, charcoal burning for diversifying the livelihood of pastoralists has been accelerating deforestation and threatening the habitat of wildlife, and forces wild animals such as elephants to “invade” to the pastoral area and water resource. It escalates the human-wildlife or livestock-wildlife conflicts.



Also Like in most other pastoral counties of Kenya, Kajiado is now gravely threatened by intensifying population pressures and land use/cover changes compounded by climate change and rapid urbanization. The major wetlands are threatened with siltation, excessive water abstraction for irrigation, urban and industrial uses and pollution from agrochemical residues.

Governance Vulnerability to Drought

It was found out lots of policies and legislations have been designed and implemented for addressing to climatic risks, especially drought. The following examples are some of the typical policies or strategies.

- The Wildlife Policy (1975)
- Environmental Management and Coordination Act (1999)
- The National Policy for Sustainable Development of ASALs (2004)
- Vision 2030 Plan (2005)
- Forest Act (2005)
- Forest Policy (2005)
- The National Livestock Policy (2008)
- The National Trade Policy (2008)
- The National Land Policy (2009)

- The Constitution of Kenya (2010)
- Tourism Act (2011)
- Vision2030 Development Strategy for Northern Kenya and Other Dry Areas (2011)
- National Climate Change Action Plan (2013-2017)

However, even though there are currently numerous policies or projects, most of the informants working at governmental organizations pointed out the lack resources addressing those above mentioned problems or conflicts. The problems are: weak institutional and policy framework for collaborative governance of natural resources and delivery of multiple benefits amongst relevant stakeholders, very few staffs and facilities for the related section, limited and undocumented information, or limited investments. Additionally it was found that there is a big gap of recognition between the government and local people on each attitude. The governmental officials claimed that they have been facing problems such as less hostility and over expectation of community and unsustainability of projects due to very limited resources. On the other hand, local people criticized the government by some reasons such as less involvement/participation of local people to the projects, limited information and outreach for the local communities, less inclusive institutional approaches, and ineffective implementation of policies. Local people also claimed that government decisions often made through fiat rather than negotiation, consultation and consensus. Unfortunately these gaps have not been filled sufficiently.

5. Conclusion

Throughout the field research in Kajiado, it was found out that prolonged drought in this decade has been creating/intensifying various problems and conflicts in the local society depending on pastoralism. Interactive and complicating factors are destabilizing regional security in Kajiado and various risks are linked directly and indirectly. Inter-boundary migration/immigration of pastoralists to access to pasture and water have been increasing due to drought, however the migration have been accelerating conflicts and limited resources of governments and the lack of governance obstacle effective solution.

There are some recommendations for stabilizing the regional security on drought. Diversification of livelihood options: more eco-friendly and fit with the local context, such as beekeeping, sericulture, aloe vela farming and eco-friendly charcoal burning have been implemented by the support from Kenya Wildlife Service and NGOs recently. Some staffs of government and international organization pointed out that capacity building of local actors including local government structures, gender equality, social inclusion, livestock insurance, and re-forestation are essential to improve resilience to

climate change of Kajiado. Restoration and protection of traditional pastoral rights, including legal rights to water and pasture resources are needed to (re-)stabilize the local governance and fragmented traditional grazing route/area for more effective climate change adaptation strategies and conflict reduction mechanisms. The future of Kenyan and East African pastoral societies have been debated by various actors, including development and policy planners, social scientists, and local pastoralist groups themselves. More comprehensive analysis combining meteorological / geographical vulnerability and governance vulnerability to the climatic variability and long-term solution are needed to break the negative cycle of risks and to stabilize the regional security on climate variability.

6. Reflection on the GLTP in Africa

Through participating to the GLTP in Africa, I could learn two things beside the main result of research: how to conduct field research with various stakeholders. Although this was not my first time to conduct field research, I could meet people with more various back ground, since I got the support from UNU and University of Nairobi. I also recruited and trained a research assistant for my field survey, and conducted group discussions. As well as the finding from the research, I could learn how to communicate and collaborate with the people with various back ground from the experience of preparing and conducting the research itself.

I also could develop my ideas on global career-path in the future. I could find the role of international organizations to address climatic issues is more important that I expected before conducting my research. Therefore I visited the offices of various international organizations located in Nairobi and other cities in Kenya, and asked the staffs on their career-path and career development. They suggested me how to connect the research career and job career, apply the internship program, or needed skill and experience for working at international organization. After coming back to Japan, I have been looking for the internship at international organization to take the first step for my global career development.

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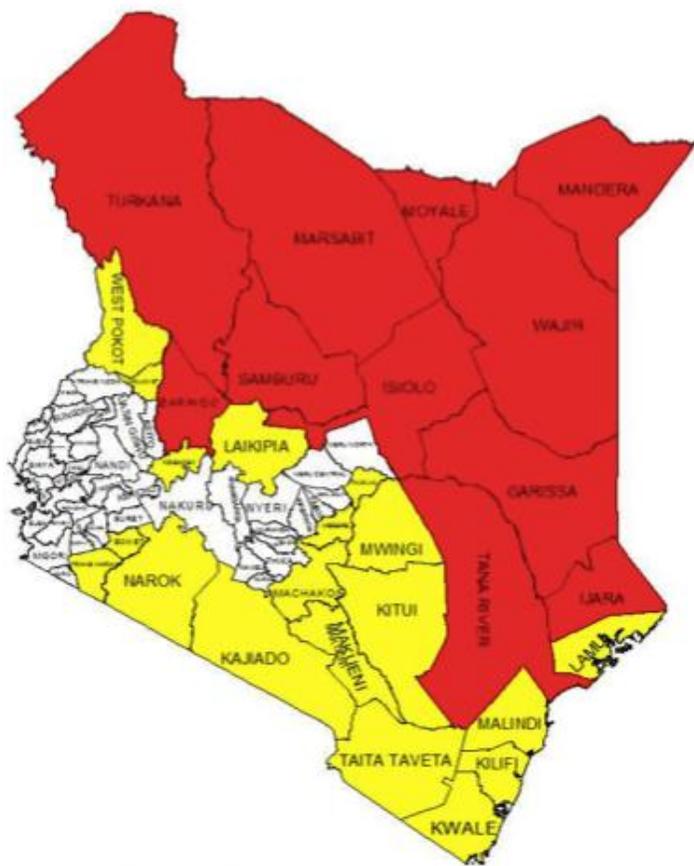
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Appendix

List of Key Informants and the date for interview

Date	Key informants	Outputs
20 Jan.	JICA Kenya	General information on JICA's projects mitigating the risks of climate change in Kenya
09 Feb.	County Commissioner of Kajiado	General information on drought issue in Kajiado
09 Feb.	Dir. Min. Livestock	General information on livestock movement in Kajiado
09 Feb.	Dir. Kenya Wildlife Service	General information on human-wildlife conflicts in Kajiado
09 Feb.	Dir. National Environment Management Authority	General information on drought issue in Kajiado
13 Feb.	County Secretary of Kajiado	Self introduction, research permit, general information on governance structure in Kajiado
13 Feb.	Dep. Dir. National Drought Management Authority	Drought risks in Kajiado and NDMA's projects
13 Feb.	Dir. Agricultural Sector Development Support Program	Drought risks in Kajiado on agricultural industry
16 Feb.	Dir. Agricultural Sector Development Support Program	ASDSP's projects mitigating drought risk in Kajiado
17 Feb.	Dir. Min. Livestock	Impact of drought to livestock industry in Kajiado
18 Feb.	PM of International Organization for Migration	Drought and human migration in ASALs of Kenya
04 Mar.	PM of Welthungerhilfe	International NGO's perspective on drought issue in Kajiado
04 Mar.	PM of Neighbors Initiative Alliance (local NGO)	CBO's perspective on drought issue in Kajiado
05 Mar.	Coordinator of Kenya Regional Office, UNEP	International organization's projects mitigating climatic risks in Kenya
09 Mar.	Local chief of Imbirikani Group Ranch	Impact of drought risks in Imbirikani
10 Mar.	Local chief of IGR	Impact of drought risks in Imbirikani
10 Mar.	Committee Member of IGR	Impact of drought risks in Imbirikani
19 Mar.	Dir. Japan Red Cross in Kenya	RC's projects mitigating the risks of CC in Kenya

Arid and Semi-arid Lands of Kenya⁶



⁶ Government of Kenya, Vision2030 Development Strategy for Northern Kenya and Other Dry Areas, 2011