

Oil, conflict, and climate change vulnerability of pastoral communities in Northwest Kenya

J. Schilling et al.

The nexus of oil, conflict, and climate change vulnerability of pastoral communities in Northwest Kenya

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Title Page

Abstract

Introduction

Conclusions

References

Tables

Figures

◀

▶

◀

▶

Back

Close

Full Screen / Esc

Printer-friendly Version

Interactive Discussion

Abstract

Turkana, in northwest Kenya, is the country's poorest and least developed county. Pastoralism in Turkana is well adapted to the harsh climatic conditions but an increase in drought frequency associated with global climate change and intensifying violent conflicts between pastoral groups, poses significant challenges for local communities. The conflicts are especially violent in the border region between the Turkana and the Pokot communities. In this very region significant oil reserves have been found recently. The first aim of this paper is to analyse how the oil exploration affects the communities' vulnerability to climate change. Secondly, the paper explores the risk of the oil explorations to create new conflicts or aggravate existing ones. The primary method of the study is qualitative field research supplemented with a geo-spatial analysis of conflict data. The field research was conducted in October 2013 and April 2014 in three villages with different levels of engagement with the oil exploration. At the time of the research, oil exploration was expected close to Lokwamosing while it had recently started in the vicinity of Lopii and had been ongoing for a longer time close to Nakukulas. The findings suggest that the oil exploration increases the community's vulnerability to climate change. Further, unmet community expectations for water, employment and development pose a significant risk for violent conflict between local communities and the operating oil company. Intercommunal conflict over water and land could increase as well.

1 Introduction

Agriculture and pastoralism are the dominant sources for food production and income generation in Africa (World Bank, 2014). Especially in arid and semi-arid regions such as Turkana in northwest Kenya, pastoralism is a well-suited livelihood and production system that makes efficient use of the highly limited water and pasture resources (Levine, 2010; Koocheki and Gliessman, 2005). But pastoralism across the

ESDD

6, 1163–1200, 2015

Oil, conflict, and climate change vulnerability of pastoral communities in Northwest Kenya

J. Schilling et al.

Title Page

Abstract

Introduction

Conclusions

References

Tables

Figures

◀

▶

◀

▶

Back

Close

Full Screen / Esc

Printer-friendly Version

Interactive Discussion



Oil, conflict, and climate change vulnerability of pastoral communities in Northwest Kenya

J. Schilling et al.

Title Page

Abstract

Introduction

Conclusions

References

Tables

Figures

◀

▶

◀

▶

Back

Close

Full Screen / Esc

Printer-friendly Version

Interactive Discussion



African continent is often viewed by national governments as being “backward” and partly even “primitive” (see Pavanello, 2009; Devereux, 2010). Views like these have resulted in political, economic and social marginalisation and discrimination of pastoral communities (GoK, 2007). Turkana is no exception. Here, the limitation of pastoral mobility by the government of Kenya and the neighbouring governments (mainly Uganda, Ethiopia and partly South Sudan) has decreased the adaptive capability of pastoralists (Schilling et al., 2014). This is particularly critical as an increase in rainfall variability and higher drought frequency, associated with global climate change, pose significant challenges for pastoral communities (Schilling et al., 2014; Opiyo et al., 2014). However, most detrimental to the resilience of Turkana pastoralists and their livelihood in general, are the violent conflicts between pastoral groups. Each year hundreds, some sources suggest thousands of people loose their lives in violent attacks, called raids, executed to acquire livestock or gain control over water points and pasture resources (Schilling et al., 2012b; CEWARN, 2010). Within Turkana the conflicts are particularly violent in southern Turkana where the Pokot of Kenya and Uganda raid the Turkana and vice versa (Mkutu, 2006, 2010; Schilling et al., 2012b). In this conflict-affected, underdeveloped (in the formal sense) and water scarce area, significant oil reserves have been discovered recently (see also Anderson and Browne, 2011). The dimensions are immense. The main basin in Turkana alone contains more than 600 million barrels of oil according to the UK-based operating company Tullow Oil (Tullow, 2014b). The commercial viability has been confirmed and Tullow’s exploration director concludes that “northern Kenya has the potential to become a significant new hydrocarbon province” (Tullow, 2014b). For the government of Kenya the discovery of oil is “very good news” (Daily Monitor, 2012) as former President Kibaki stated after first oil explorations in 2012.

For the pastoral communities the effects of the oil exploration are likely to be more ambivalent. But how ambivalent? A review of existing studies on pastoralism and oil provides little ground to answer this question, simply because there are very few studies on oil exploration, pastoralism, conflict and climate change. On Kenya there is so far

Oil, conflict, and climate change vulnerability of pastoral communities in Northwest Kenya

J. Schilling et al.

Title Page

Abstract

Introduction

Conclusions

References

Tables

Figures

◀

▶

◀

▶

Back

Close

Full Screen / Esc

Printer-friendly Version

Interactive Discussion



only one study but Johannes et al. (2014) do not specifically focus on vulnerability to climate change. The authors conclude that oil is part of “a tinderbox of risk and opportunism for violent conflict, lawlessness, and potential armed rebellion” (Johannes et al., 2014).

Most other studies on the topic have focused on (South) Sudan. For pastoralists in Sudan already confronted with militarisation of inter-ethnic conflicts and displacement, oil is an additional worry (Chavunduka and Bromley, 2011). Chavunduka and Bromley (2011) conclude that “oil has not engendered peace and prosperity but the exact opposite”. Similarly, Pantuliano (2010) finds that oil exploitation in Sudan has contributed to environmental degradation, for example through tree-cutting for oil extraction sites, which in turn has exacerbated conflict over land (see also Switzer, 2002). Further, disappointed expectations of pastoralists for employment in the oil sector have led to attacks on oil sites and contributed to insecurity. But Pantuliano (2010) also points to positive aspects of the oil exploitation. The road infrastructure and hence the mobility has improved as a result of the presence of the oil industry. Along the oil roads new settlements and markets have emerged, opening new opportunities for trade and development.

Beyond (South) Sudan, there are several studies exploring the effects of oil exploitation on communities, although not on pastoralists. Particularly in Nigeria the detrimental effects of oil exploitation on the environment and the communities is well studied (for example Aghalino, 2009; Anifowose et al., 2012; Ikelegbe, 2001; Obioha, 2009; Osuji et al., 2004). Given the significant revenues earned with oil and the persistent high levels of insecurity and urban poverty, oil has mostly become a “resource curse” for communities in rural Nigeria (Sala-i-Martin and Subramanian, 2013; Obi, 2012; Idemudia, 2012). For example, unfair distribution of oil revenues has been reported as a major cause of attacks on oil pipelines and raids of oil sites (Anifowose et al., 2012). In Angola the exploitation is similarly viewed as mostly negative for rural development (Amundsen, 2014; Wenar, 2013; Hammond, 2011). For Uganda, International Alert identifies conflict risks associated with oil but the

peacebuilding organisation also stresses the opportunities of “harnessing oil for peace and development” (International Alert, 2009; see also Vokes, 2012).

The overall aim of this paper is to explore the interactions between oil exploration, conflict and vulnerability of pastoral communities to climate change. This aim is divided into two specific research questions. First, how does the oil exploration affect the communities’ vulnerability to climate change? Second, what is the risk of the oil exploration to create new conflicts or aggravate existing ones? To address these questions, field research was conducted in October 2013 and April 2014 in Turkana South. Specifically, the three villages Lokwamosing, Lopii and Nakukulas were chosen to be able to compare communities with different levels of engagement with the oil exploration. The qualitative research was supplemented with a geo-spatial analysis of conflict data in Turkana. More details on the methods are described in the following section before the results are presented and conclusions are drawn.

2 Methods

2.1 Research area

The study was carried out in the county Turkana, located in north-west Kenya (Fig. 1). Nomadic pastoralism is the main livelihood in Turkana. Water, pasture, land and livestock (mainly cattle, goats, sheep and camels) are the key resources for the population. The lack of formal education, poor health and road infrastructure, and the limited existence of businesses (mostly concentrated in Lodwar) offer the Turkana population very few opportunities in the formal job market (UNDP, 2010, 2006). Turkana has a poverty rate of 94%. About 76% of the population never attended a school (Kenya Open Data, 2011a, b). In their “National policy for the sustainable development of arid and semi-arid lands”, the government of Kenya (2007) acknowledges the marginalisation of Turkana and the government’s failure to integrate Turkana into the

Oil, conflict, and climate change vulnerability of pastoral communities in Northwest Kenya

J. Schilling et al.

Title Page

Abstract

Introduction

Conclusions

References

Tables

Figures

◀

▶

◀

▶

Back

Close

Full Screen / Esc

Printer-friendly Version

Interactive Discussion



national economy. Insecurity related to pastoral conflicts and violent livestock raids is widespread in Turkana (see Schilling et al., 2012b, Fig. 1 and Sect. 3.2).

The climate in Turkana is semi-arid to arid and characterised by a bi-modal rainfall pattern with “long rains” between October and December and “short rains” between March and May” (McSweeney et al., 2012). Reliable climate data is mostly available for Lodwar, the county capital of Turkana. In Lodwar the annual rainfall ranges from 500 mm in particularly wet years to less than 50 mm in drought years (Schilling et al., 2014).

The average annual temperature in Lodwar is usually above 30°C. Global climate change is likely to lead to temperature increases and a more variable and less predictable rainfall pattern in Turkana (Schilling et al., 2014; McSweeney et al., 2012). Both trends are likely to increase the drought risk. Droughts, a historically common phenomenon in Turkana have already been occurring more often in the past decades (Mude et al., 2009; Opiyo et al., 2015). In general, water is a scarce resource in Turkana. Lake Turkana is the only permanent source of water, although with a high salt concentration. Apart from several smaller ephemeral rivers (called *laghas*), the semi-permanent rivers Turkwel and Kerio are the only source of freshwater (see also Kenya Open Data, 2014a).

Within Turkana, the study was conducted in the Sub-Counties Turkana South and Turkana East (Fig. 1). The counties cover an area of about 18 670 km² and have a population of about 226 000 people (Kenya Open Data, 2014b). The villages of Lopii, Nakukulas and Lokwamosing were chosen for the field research to be able to compare different levels of engagement with the oil exploration.

Lokwamosing is furthest away from any oil exploration site. At the time of the research, members of the community in Lokwamosing had only heard about oil exploration but they had no contact with any oil company. Oil exploration had recently started in the vicinity of Lopii. Community members in Nakukulas had the most engagement with Tullow. Ngamia is the first and most developed onshore exploration site in Kenya. When the exploration at Ngamia started in January 2012 over 200 m of

Oil, conflict, and climate change vulnerability of pastoral communities in Northwest Kenya

J. Schilling et al.

Title Page

Abstract

Introduction

Conclusions

References

Tables

Figures

◀

▶

◀

▶

Back

Close

Full Screen / Esc

Printer-friendly Version

Interactive Discussion



Oil, conflict, and climate change vulnerability of pastoral communities in Northwest Kenya

J. Schilling et al.

Title Page

Abstract

Introduction

Conclusions

References

Tables

Figures

◀

▶

◀

▶

Back

Close

Full Screen / Esc

Printer-friendly Version

Interactive Discussion



of non-governmental organisations (NGO) working in the research area. For example a discussion was held with a group consisting of local NGO representatives and local businessmen working on natural resources in Turkana South.

All efforts were made to get interviews with or statements from Tullow Oil representatives but the requests were denied. The research team spoke to a few Tullow Community Liaison Officers (CLO) but these were not formal interviews from which direct quotes could be used. The atmosphere was partly tense, especially in Nakukulas where the purpose of the research had to be explained extensively prior to the survey.

The individual and small group interviews were based on an interview guideline structured along the themes of “general changes”, “worries” and “expectations/hopes”. To avoid biasing responses, terms such as “oil”, “conflict” and “climate” were only used by the researchers after respondents used them first. Further, participating and non-participating observations were conducted. These were particularly useful to assess sensitive issues such as interactions between Tullow representatives and communities as well as the operations of the oil exploration itself.

The secondary research method of this study is quantitative. Data on livestock raids in Turkana, collected by the local NGO Turkana Pastoralist Development Organisation (TUPADO) was analysed using Excel (for a more detailed description of the conflict data see Schilling et al., 2012b). The data was then geo-referenced using ArcGIS, to show the distribution of raids and the location of oil exploration sites within Turkana (see Fig. 1 and Sect. 3.2.2). The analysis is limited to 2006 to 2009 as the reporting was only consistent in this period.

In addition, an in-depth review of the literature on pastoralism, conflict, oil and climate change was conducted and newspaper articles and press releases by oil companies operating in Turkana were studied. The research team also drew on experience gained over five months in 2011 during field research on conflict and climate change in Turkana (see Schilling et al., 2012b, 2014).

Oil, conflict, and climate change vulnerability of pastoral communities in Northwest Kenya

J. Schilling et al.

Title Page

Abstract

Introduction

Conclusions

References

Tables

Figures

◀

▶

◀

▶

Back

Close

Full Screen / Esc

Printer-friendly Version

Interactive Discussion



Like every study, the present one has its limitations. The sample size is limited to three villages and the perspective of Tullow could not be captured directly. The latter could in parts be compensated by informal conversations with Tullow representatives and a review of Tullow press releases. And while three villages are not representative for Turkana as a whole, this is to the authors' knowledge one of the first studies that explores the oil-conflict-pastoralism-climate-nexus in Kenya.

2.3 Conceptual framework

The study applies a conceptual framework based on agents who each have a certain capability and motivation to pursue certain goals. This approach has been developed by Scheffran et al. (2012) and previously applied to the Turkana-Pokot conflict (see Schilling et al., 2012b). Motivation is commonly understood as the process that initiates, guides, and maintains goal-oriented behaviours. Capability is the ability to execute a certain course of action (Scheffran et al., 2012). This relates to skills, knowledge, experience and networks on the one hand and financial resources and physical means such as men, weapons and ammunition on the other. Each actor has the choice between investing resources into a cooperative path which implies to try to work with other actors or into a conflicting path which implies pursuing aims in a forceful manner (Fig. 2).

Figure 2 shows that if one actor chooses the conflict path the other actor almost has to take this path as well to avoid disadvantages. In theory, mutual cooperation has the potential to generate the highest overall benefit for all actors as no resources are wasted for destructive purposes.

To be able to apply the described framework, key terms need to be defined. Violent conflict is defined as the forceful settlement of opposing views. In contrast, cooperation is the peaceful sharing of resources and a state in which differences are reconciled peacefully. Climate change relates to long term changes in temperature and rainfall (IPCC, 2013). These interact with environmental changes, for instance land degradation which in turn are driven by human action (e.g. overexploitation of land).

Oil, conflict, and climate change vulnerability of pastoral communities in Northwest Kenya

J. Schilling et al.

Title Page

Abstract

Introduction

Conclusions

References

Tables

Figures

◀

▶

◀

▶

Back

Close

Full Screen / Esc

Printer-friendly Version

Interactive Discussion



Vulnerability, specifically the vulnerability of the communities in Lokwamosing, Lopii and Nakukulas, is commonly divided into the three elements of sensitivity, exposure and adaptive capacity (IPCC, 2014). Sensitivity is determined by the effect of climate change on a particular resource (for instance water), its availability and how important the resource is for a certain actor (Schilling et al., 2012a). Climate exposure is the rate and extent of temperature and precipitation changes that a region is exposed to. The exposure to climate change interacts with exposure to environmental changes, for instance water pollution. It is hence important to consider the climate exposure in conjunction with the environmental exposure (see for example Schilling et al., 2013). Adaptive capacity relates to the actor's knowledge, skills, options and assets to adapt to climatic changes (IPCC, 2014). Since risk is a central term of this study, it is important to define it as well. Risk is understood as a product of the likelihood of an event to happen and its (potential) impact (Scheffran et al., 2012).

3 Results and discussion

The result section is structured along the two research questions. In the first section the effects of the oil exploration on the communities' vulnerability to climate change are presented. The second section addresses the risk of the oil explorations to create new conflicts or aggravate existing ones.

3.1 Oil exploration and community vulnerability

Figure 3 summarises the effects of oil exploration on the communities' vulnerability to climate and environmental change. Each element of sensitivity, environmental exposure and adaptive capacity is worded to have the same sign as the respective category. For instance, the higher the water scarcity and dependence on pastoralism, the higher is the sensitivity. Major current and future effects are shown in bold. Land and especially water use are the issues contributing most to community vulnerability.

Oil, conflict, and climate change vulnerability of pastoral communities in Northwest Kenya

J. Schilling et al.

Title Page

Abstract

Introduction

Conclusions

References

Tables

Figures

◀

▶

◀

▶

Back

Close

Full Screen / Esc

Printer-friendly Version

Interactive Discussion



In the future, the issues of water extraction, pollution and soil degradation are likely to become more prominent. Elements of the adaptive capacity of the communities are likely to have improved due to Tullow's payments to the communities and investments into education. In the future, there is a risk that the pipeline between the extraction site and the refinery will disrupt migration routes of the Turkana and other pastoral groups in the area. Overall, the oil exploration and particularly the oil exploitation are likely to make the communities more vulnerable to climate change. The following sections describe each element of vulnerability in more detail.

3.1.1 Sensitivity

Water and land (including pasture) are already scarce resources in Turkana. Oil exploration and exploitation aggravates water scarcity as significant amounts of groundwater are needed in every step (including drilling, injection, completion, and fracturing) (Allen et al., 2011). Studies for Canada for instance show that about three barrels of water are needed to extract one barrel of oil (Ptacek et al., 2004). Tullow aims to produce 100 000 barrels of oil per day in Kenya and mainly in Turkana (Standard, 2015). This will likely be felt in the mid to long run while in the short run Tullow has improved the communal access to water through the installation of water tanks along the main road and in Nakukulas and Lopii. Community members reported that these tanks are filled by Tullow with water trucks.

Further, the extraction of oil in Turkana has the potential to offer some direct employment opportunities with Tullow and stimulation for the local economy, for example in the nearby town Lokichar. Both could to a certain extent decrease the communities' dependence on pastoralism and hence make it less sensitive to climatic and environmental changes (Fig. 3). However, given that the effect of oil extraction on local employment is limited (see Sect. 3.2.1), the importance of water for pastoral communities and hence their climate sensitivity is likely to remain high.

3.1.2 Exposure

Globally the burning of fossil fuels, including oil, is a major driver of climate change (Armaroli and Balzani, 2011). But the oil exploration in Turkana, at least so far, increases the climate exposure for the pastoral communities to a negligible extent.

5 However, the oil exploration in Turkana exposes the communities to environmental changes which in turn interact with changes in temperature and rainfall. Exposure to pollution of water, land and air is a major concern (Fig. 3). It has been known for a long time that oil spills on land can “pose long term threats to groundwater quality” (Duffy et al., 1980). Studies conducted in Nigeria show that oil extraction can
10 have detrimental effects on the environment and local populations, especially where environmental regulations are lacking or are not enforced, like in Kenya (for Nigeria see Linden and Palsson, 2013; Iwegbue, 2007; Orisakwe, 2009). Apart from the risk of contamination of drinking water (Owamah et al., 2013), for example by so called non-aqueous phase liquids (NAPL), there is the possibility of inter-aquifer leakage. This term describes the process in which pumping causes (contaminated) ground water from another aquifer to enter the one being pumped (EPA, 1993). While the pollution of aquifers by oil is an environmental risk, it is beyond this study to assess this issue in detail. The respondents did not mention the pollution of water, possibly because they are not noticeable yet as the exploration in Turkana has only started in 2012.
15 In addition to water, land could be polluted for instance by the dumping of oil wastes without proper sealing and treatment (Khaitan et al., 2006; da Silva et al., 2013). But again, the pollution of land did not feature strongly in the responses of the communities.

The community members reported several smaller changes in their environment related to the oil operation and preparation for it. Pastoralists from Lopii and Nakukulas
25 mentioned that the noise and vibrations caused by the drilling disturb and scare the livestock. Community members claimed that some of their smaller livestock were injured by the wires that Tullow has set up. The research team observed that these wires run for several hundred meters about ten to twenty centimetres over the ground.

Oil, conflict, and climate change vulnerability of pastoral communities in Northwest Kenya

J. Schilling et al.

Title Page

Abstract

Introduction

Conclusions

References

Tables

Figures

◀

▶

◀

▶

Back

Close

Full Screen / Esc

Printer-friendly Version

Interactive Discussion



Oil, conflict, and climate change vulnerability of pastoral communities in Northwest Kenya

J. Schilling et al.

Title Page

Abstract

Introduction

Conclusions

References

Tables

Figures

◀

▶

◀

▶

Back

Close

Full Screen / Esc

Printer-friendly Version

Interactive Discussion



As they are often hidden by bushes, it is plausible that pastoralists see the wires as a tripping hazard for them and their livestock. Another reported change in the environment is black smoke coming from the oil extraction sites. Several community members in Nakukulas stated that they were afraid of the smoke since they were not used to it. And while the Turkana are used to cars, a few pastoralist reported that more livestock is injured or killed in road accidents. Indeed, the increased traffic with jeeps, trucks and movement of heavy machinery related to the oil exploration was noticeable. Several pastoralists from Nakukulas complained that Tullow had cut down several trees and therefore shade was lacking to protect livestock from the heat.

3.1.3 Adaptive capacity

The adaptive capacity is mainly determined by the knowledge, skills, resources and options the pastoralists have. A key adaptation strategy to lack of water and pasture is migration (Schilling et al., 2014). Some pastoralists claimed that the oil exploration sites have altered their migration routes but the extent seems to be limited. This is likely to change when the extraction sites are connected to the refinery through a pipeline (see Tullow, 2014a for the route of the pipeline). The degree of disruption caused by the pipeline will depend on how much of the pipeline will run underground. According to Tullow (2014a) this will “mostly” be the case.

The research team observed envelopes being handed out by Tullow representatives to several community members in Lopii who reported that Tullow has been handing out cash to the community. While this has other implications (see Sect. 3.2), the availability of financial resources generally increases the adaptive capacity of community members. Employment and stimulation of the local economy related to the oil extraction in Turkana offer further income opportunities. However, the low level of formal education is a disadvantage of the communities. Tullow has made efforts to contribute to education in Turkana. In Nakukulas, as part of its corporate social responsibility package, Tullow has built two classrooms and bought textbooks for the

Oil, conflict, and climate change vulnerability of pastoral communities in Northwest Kenya

J. Schilling et al.

Title Page

Abstract

Introduction

Conclusions

References

Tables

Figures

◀

▶

◀

▶

Back

Close

Full Screen / Esc

Printer-friendly Version

Interactive Discussion



team of this study was also held up in a community road block which was resolved without violence after about half an hour. Community members in Nakukulas also reported that “some Turkana” had “chased away” workers who were trying to fence off an area. Several participants of a gender-mixed focus group discussion in Nakukulas mentioned that they have “seen people” destroying the wires that Tullow installed. The majority of participants in the focus group discussion supported this action. Especially in comparison to the other two research location, the atmosphere at the time of the research visits was tense. During the first research phase in October 2013 it took the local research assistants some efforts to explain the purpose of the research and that the visitors are not associated with Tullow before the community would speak to the research team. Without being asked for it the community members in Nakukulas started talking about Tullow and oil which were the dominant topics. During the second research phase, the research team only interviewed the chief of Nakukulas because the aggravation of the community had reached a level which did not allow further interviews on this heated topic. Between the two research trips the level of violence between Nakukulas and Tullow had escalated. Newspapers reported of community demonstrations and storming of an oil site, including lootings and destruction of property (Nation, 2013). Tullow had to hold operations for several weeks because of the fragile security situation (Standard, 2013).

The causes of the community anger towards Tullow are less driven by the externalities of the oil exploitation but rather by the unmet expectations that the communities have for Tullow.

The expectations have to be understood against a wider background. There is a strong perception within the three communities and among pastoral groups in Turkana in general that they have been “forgotten” by the central government who does not care if they live or die (Schilling et al., 2012b; de Vries et al., 2006; Lesorogol, 2008; McCabe, 2004). This perception and the high development needs in Turkana create a hotbed for extremely high community expectations for the oil companies operating in the area. The communities see Tullow coming in with heavy and expensive machinery,

building roads and drilling for water that the communities were unable to access. Table 1 shows the expectations of the communities in Lopii and Nakukulas (ranked by their importance) and how well they are met according to the communities.

By far, the most important issue was employment. “We want Tullow to give us jobs”, was a recurring expectation articulated by community members in both Lopii and Lokwamosing. In Nakukulas this expectation has already been disappointed.

According to the county government act, 70 % jobs from Tullow are meant for local Turkana and 30 % for others. However this allocation is not being met. Community members themselves acknowledge that the locals are not qualified. They suggested that Tullow could offer apprenticeships to train them. Several respondents felt they are stereotyped as a community as being illiterate and ignorant pastoralists. The highest position a Turkana has at Tullow is Community Liaison Officer, there are no Turkana in management positions, and the best job a young Turkana man can get is a security guard (earning about KES 18 000 (Kenyan Shilling) or USD 190 per month). According to villagers, Tullow even flies in drivers from Nairobi. This is a source of major resentment: “Employment from Tullow goes to people from Kitale. Leadership is not proactive to help us get work. They say we are not learned to get jobs, that we have not been to school. We don’t know what kind of school these people in Kitale have! If we are not learned, can we not be given causal jobs?” If things do not change, community members saw that conflict was inevitable. “We can only see a tense future with Tullow unless the government can do something good for us that will let us forget our precious treasure that have been taken from us.”

Tullow has not released any recent numbers on employment and the company was not available for any interviews. In October 2013, a press release by Tullow claimed that “Tullow employs over 800 people from the Turkana region out of the 1400 people currently employed on Tullow’s Kenyan operations” (2013b). There are several newspaper reports and websites citing a more recent Tullow statement that “as at the end of August 2014, 2187 out of the 3619 staff employed by Tullow and its contractors came from Turkana” (Oilnews, 2014; Business Daily, 2014). The statement is however

ESDD

6, 1163–1200, 2015

Oil, conflict, and climate change vulnerability of pastoral communities in Northwest Kenya

J. Schilling et al.

Title Page

Abstract

Introduction

Conclusions

References

Tables

Figures



Back

Close

Full Screen / Esc

Printer-friendly Version

Interactive Discussion



ESDD

6, 1163–1200, 2015

Oil, conflict, and climate change vulnerability of pastoral communities in Northwest Kenya

J. Schilling et al.

Title Page

Abstract

Introduction

Conclusions

References

Tables

Figures

◀

▶

◀

▶

Back

Close

Full Screen / Esc

Printer-friendly Version

Interactive Discussion



not available (anymore) on the Tullow website and it needs to be questioned whether the numbers are realistic, at least for the research area. According to the chiefs and community members in Nakukulas and Lopii, the direct employment of Turkana in the oil sector has been minimal. Numbers between four and fifteen were given. Community members stated that the highest position a Turkana has at Tullow is Community Liaison Officer (CLO). The CLOs are the main communication channel between Tullow and the communities. On the one hand the CLOs are supposed to listen to the communities' needs, concerns and complaints and to feed them back to Tullow. On the other hand CLOs should inform the communities about the company's actions and plans. Another position mentioned was security guard. In the capital rather than labour intensive oil industry the demand for unskilled labour is low.

Water is the next critical conflict issue. The three communities expect Tullow to give them water. To a limited extent, Tullow is doing this; drilling boreholes, setting up water tanks and filling them, according to an informal interview with a CLO, "on a regular basis". In addition, water points with pumps are set up in communities. However, the members of the Nakukulas community reported that Tullow only started to share the pumped water after on-going and vocal complaints from the community. Further, Tullow is unlikely to meet the communities' expectations for water. One elder in Nakukulas stated that "we have only very small positive changes from Tullow since 2011. The water pump they gave us is not enough as it serves both livestock and community – one water source can not support everyone." Asked about the reasons for the community road blocks and attacks on Tullow, most interviewees responded "jobs" and "water". The latter is likely to become more prominent in the future when almost inevitable high usage and pollution of groundwater will become noticeable.

Land is the third critical conflict driver. Traditionally Turkana is communal land which means there is no individual ownership of the land. However, the government of Kenya has given Tullow and Oil Africa licences to explore oil reserves in Turkana. The communities in Lopii and especially in Nakukulas perceive Tullow has an actor who comes and takes their land without proper community consultation or compensation

Oil, conflict, and climate change vulnerability of pastoral communities in Northwest Kenya

J. Schilling et al.

Title Page

Abstract

Introduction

Conclusions

References

Tables

Figures

◀

▶

◀

▶

Back

Close

Full Screen / Esc

Printer-friendly Version

Interactive Discussion



of taken land. One woman from Nakukulas states “of our two enemies [Pokot and Tullow], we fear the Pokot the most. Tullow will only take our land, but the Pokot will take everything and kill us.” Several community members mentioned that Nakukulas has received some compensation from Tullow. One elder named an amount of KES 2.2 million (USD 24 000). In Lopii the research team observed Tullow distributing one-off cash payments to households. The immediate response in the community was very positive. “Today is like a festival” stated one woman. But the payments are likely to further increase community expectations for more payments, especially because the compensations for the lost resources are seen as insufficient. The following statement from Nakukulas summarises the view on compensations. “[These] are good but too small to address the negative impacts of the companies. They are not enough for us. We cannot consider the small gestures as compensation for the amount of land and animals they have taken from us.” Another elder added, “our main concern is the land they [Tullow] have taken from us.” The communities have not received any compensation from the Kenyan government. Once the actual exploitation of the oil reserves starts (see Sect. 2.1), the Kenyan constitution demands that the profits are shared between the national government receiving 70 %, the county government receiving 20 and 10 % are meant to directly go to the local communities (Republic of Kenya, 2010). The issue of revenue sharing is already causing disagreements between the different levels of government (Star, 2012).

The demand for education was less of a conflict driver in Lopii and Nakukulas, although still present. Tullow has made efforts to improve the level of education in Turkana. According to Tullow 100 (out of 11 000) applicants were selected for the 2013/14 scholarship program which supports postgraduate degrees, technical trainings and vocational studies (Tullow, 2013a, b). In Nakukulas the company has built two new classrooms, bought textbooks and gave a few students scholarship.

Some community members in Nakukulas expressed hopes that Tullow could improve the security situation in the region. But an elder noted “Tullow is not concentrating on

conflict between Turkana and Pokot. Pokot always come and raid us. Tullow does not even want to mitigate or to respond” (see also Sect. 3.2.2).

The conceptual framework, developed under Sect. 2.3, is useful in understanding the interactions between the communities and Tullow. The communities in Lopii and especially Lokwamosing had not interacted with Tullow much. But in Nakukulas a motivation to choose a conflicting path with Tullow could be observed. In the first research phase the assistant chief of Nakukulas explained that if community members have a complaint, for example over the cutting of trees, an animal hit by a Tullow vehicle, or about a water issue, the elders come together to talk to the village chief, who then takes the issue to the district commissioner and finally to Tullow. The majority of respondents expressed dissatisfaction with this very indirect way and the response to some of the complaints. CLOs offer a more direct way of communication but Tullow had stopped sending CLOs to Nakukulas, likely because of the tense security situation associated with a series of community road blocks and an attack on an oil site. This shows that after the Nakukulas community had chosen a conflicting path, Tullow refrained from investing into a cooperative path (Fig. 2). This in turn is negatively perceived by the community. The assistant chief states; “the CLOs used to come to talk to and even stay with community to try to understand their views before extraction started but [they] stopped coming last year [2013]”. “Tullow is like a rock. It does not listen”, stated one elder. The broken communication with Tullow is likely to increase the risk of community members resorting to force to achieve their aims. Table 2 lists the main actors and their motivation and capability.

A long history of violent conflicts with other groups has provided the Turkana communities in the research area with the skills, knowledge and arms to execute violent attacks. Tullow is motivated to ensure smooth operations. The company has the financial means to set up its own security forces but these imply costs, especially when conflicts are escalating.

Despite likely contradictions with Kenya’s climate goals (Sawa, 2015), the national government supports Tullow because of the expected revenues. There is a risk that

Oil, conflict, and climate change vulnerability of pastoral communities in Northwest Kenya

J. Schilling et al.

Title Page

Abstract	Introduction
Conclusions	References
Tables	Figures

◀ ▶

◀ ▶

Back	Close
------	-------

Full Screen / Esc

Printer-friendly Version

Interactive Discussion

Discussion Paper | Discussion Paper | Discussion Paper | Discussion Paper | Discussion Paper



Oil, conflict, and climate change vulnerability of pastoral communities in Northwest Kenya

J. Schilling et al.

Title Page

Abstract

Introduction

Conclusions

References

Tables

Figures

◀

▶

◀

▶

Back

Close

Full Screen / Esc

Printer-friendly Version

Interactive Discussion



the oil profits do not trickle down through the different levels of government to the local communities, especially because corruption (rank 145 of 175 countries) and patronage along political and ethnic lines is already a widespread problem in Kenya (Transparency International, 2014; Carrier and Kochore, 2014). The member of parliament, Lomenen notes: “Oil is not the problem – it is how it is done that is the issue.” The local government, mainly represented by the village chiefs, is in a difficult position. On the one hand, the chiefs have to follow the national direction and support the oil exploration. On the other hand, they understand their communities’ frustration with the effects caused by oil exploration.

The assistant chief of Nakukulas warns that “if Tullow will not work hand in hand with the community and administration, the direction will be very, very hard for them.” An elder concluded “we do not see a positive future relationship with Tullow”. Against this background, the risk of an escalation of conflict between the community of Nakukulas and Tullow is significant. Lopii and Lokwamosing could follow that path. In addition, the exploration of oil has implications for intercommunal conflicts in the region.

3.2.2 Intercommunal conflict and oil

The research area is heavily affected by intercommunal conflicts and raids (see Fig. 1 in Sect. 2.1). Between 2006 and 2009 the average number of 71 raids per year (six raids per month) reflects the high level of insecurity expressed by the interviewees. On average two people died per raid over the four years considered (TUPADO, 2011). The highest intensity of raiding is found in the border region between the Turkana and Pokot (Fig. 1). Lokwamosing is part of this raiding hotspot while Nakukulas and Lopii fall within the second highest raid category. The distribution of raids across Turkana shows a similar pattern to the one identified by Ember et al. (2012), with two differences. First, according to the TUPADO conflict records no raids occurred in the northeast part of Turkana while Ember et al. (2012) report between 11 and 14 raids here, although over a longer period of time (1998 to 2009). Second, Ember et al. (2012) find a significantly smaller total number of raids. For instance, the dark red area in Fig. 1 indicates more

versa. However, the community interviews in Nakukulas, Lopii and Lokwamosing gave little evidence for strong grievances over employment among communities in Turkana.

3.3 Synthesis of oil, conflict, vulnerability, and climate change

Figure 4 combines the results of Sects. 3.1 and 3.2 to place them into context of the big picture. The oil exploration creates high expectations among the communities for employment, water provision and general development (education, infrastructure, financial benefits). In the communities' perception the expectations are not met which in turn can be seen as the major driver for the conflicts between the communities and Tullow. It is possible that the longer the community expectations are not met, the stronger this conflict driver will be come.

Oil exploration (and later exploitation) needs significant amounts of groundwater which the communities depend on. Other externalities (loss of land, disturbance of livestock, and disruption of migration routes) and pollution of water and soil will likely become a source of conflict but at the time of the research these externalities were less noticeable (hence a thinner line between externalities and conflict). The pollution and externalities associated with oil contribute to the communities' vulnerability through an increase of their exposure to environmental changes (reduction and degradation of water and land resources, loss of trees) and a potential reduction of their adaptive capacity through limitation of mobility (especially once the pipeline is built).

But the oil exploration can also improve the communities' adaptive capacity and hence reduce vulnerability through offering of development opportunities (Fig. 4). Direct employment with Tullow and indirect income opportunities related to the growth of local hubs such as Lokichar (Fig. 1) can strengthen the adaptive capacity of communities while reducing their dependence on pastoralism and therefore their sensitivity to climatic changes.

There were indications that oil exploration affects the Turkana–Pokot conflict through an alteration of security presence and potential greed driven motivations over territory and oil compensations but this finding is less reliable than the others.

Oil, conflict, and climate change vulnerability of pastoral communities in Northwest Kenya

J. Schilling et al.

Title Page

Abstract

Introduction

Conclusions

References

Tables

Figures

◀

▶

◀

▶

Back

Close

Full Screen / Esc

Printer-friendly Version

Interactive Discussion



Oil, conflict, and climate change vulnerability of pastoral communities in Northwest Kenya

J. Schilling et al.

Title Page

Abstract

Introduction

Conclusions

References

Tables

Figures

◀

▶

◀

▶

Back

Close

Full Screen / Esc

Printer-friendly Version

Interactive Discussion



Now the communities see a new potent actor entering the region who has the capability to drill for water, build roads and accumulate security personal. This has let the communities to transfer their expectations for development and security away from the government of Kenya onto Tullow. It is however not the company's responsibility to compensate government failure. However, Tullow is facing these expectations whether they are justified or not. Tullow has responded with some provision of water, financial compensations and education resources but there is still a strong feeling among the communities that they only experience the externalities of the "oil rush" while others, outside of Turkana get the jobs, revenues and prosperity. Unmet community expectations, especially for employment and provision of water have resulted in community road blocks, destruction of company property and attacks on oil sites. To prevent a further escalation of violence which will be detrimental to all parties involved, significant changes are needed driven by different actors.

The national government has to use the revenues generated through the selling of oil exploration licences and taxes from exploitation to finally compensate its failure in Turkana. This implies significant investments into education, health services and transport infrastructure. But most importantly the issue of insecurity and violent conflict needs to be addressed through intercommunal peace meetings, especially between the Turkana and Pokot. Further the governments need to ensure that the expected oil revenues are shared as stated in the constitution. Particularly the local communities need to benefit based on a transparent process. The issue of land has to be addressed to prevent the communities from losing their land without proper compensation. Strong environmental regulations and especially their enforcement are needed to prevent oil pollution of water and soil. The county and local government need to offer communication channels for local communities to enable them to express their concerns and requests in a more effective and direct way.

Tullow and any oil company operating in Turkana are well advised to closely communicate with the local communities to inform them about the operations, get their feedback and particularly manage their expectations. Community liaison officers

Oil, conflict, and climate change vulnerability of pastoral communities in Northwest Kenya

J. Schilling et al.

Title Page

Abstract

Introduction

Conclusions

References

Tables

Figures

◀

▶

◀

▶

Back

Close

Full Screen / Esc

Printer-friendly Version

Interactive Discussion



(CLOs) are a promising approach. While it has to be acknowledged that the demand for unskilled labour in the oil industry is limited, integration of Turkana into the company's workforce will be a positive sign for the communities. To be able to increase the share of Turkana employees, it is important to offer trainings in which community members can acquire skills needed in the oil industry. Tullow should ensure that risks of environmental pollution are minimised. Water needs to be shared with the community in a way that is reliable and transparent but also sustainable.

The communities need to reduce their expectations for employment at Tullow and redirect their legitimate demands for development and security back to the government of Kenya. Frustration with Tullow should be expressed in a non-violent manner, for example through the chiefs or CLOs. If every actor, particularly the government of Kenya and Tullow, takes these recommendations seriously, then there is a real chance that Turkana and Kenya overall can benefit from the oil. Unfortunately, the more likely scenario is that oil will exacerbate the existing marginalised and discrimination of pastoral communities which in return is likely to fuel more conflict.

Acknowledgements. The authors dedicate this publication to their dear friend Beth Njeri Njiru who has passed away so early and unexpectedly. The authors thank the communities of Lokwamosing, Lopii and Nakukulas, and every person who volunteered information for this study. The authors appreciate the helpful comments of the reviewers. The field research was made possible by International Alert. The overall work is supported through the Cluster of Excellence "Integrated Climate System Analysis and Prediction – CliSAP", Universität Hamburg, funded by the German Science Foundation (DFG).

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Oil, conflict, and climate change vulnerability of pastoral communities in Northwest Kenya

J. Schilling et al.

Title Page

Abstract

Introduction

Conclusions

References

Tables

Figures

◀

▶

◀

▶

Back

Close

Full Screen / Esc

Printer-friendly Version

Interactive Discussion



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Oil, conflict, and climate change vulnerability of pastoral communities in Northwest Kenya

J. Schilling et al.

Title Page

Abstract

Introduction

Conclusions

References

Tables

Figures

◀

▶

◀

▶

Back

Close

Full Screen / Esc

Printer-friendly Version

Interactive Discussion



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Oil, conflict, and climate change vulnerability of pastoral communities in Northwest Kenya

J. Schilling et al.

Title Page

Abstract

Introduction

Conclusions

References

Tables

Figures

◀

▶

◀

▶

Back

Close

Full Screen / Esc

Printer-friendly Version

Interactive Discussion

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Oil, conflict, and climate change vulnerability of pastoral communities in Northwest Kenya

J. Schilling et al.

Title Page

Abstract

Introduction

Conclusions

References

Tables

Figures

◀

▶

◀

▶

Back

Close

Full Screen / Esc

Printer-friendly Version

Interactive Discussion



Schilling, J., Vivekananda, J., Nisha, P., and Khan, M. A.: Vulnerability to environmental risks and effects on community resilience in mid-west Nepal and south-east Pakistan, *Environment and Natural Resources Research*, 3, 1–19, 2013.

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5

ESDD

6, 1163–1200, 2015

Oil, conflict, and climate change vulnerability of pastoral communities in Northwest Kenya

J. Schilling et al.

Title Page

Abstract

Introduction

Conclusions

References

Tables

Figures



Back

Close

Full Screen / Esc

Printer-friendly Version

Interactive Discussion



Oil, conflict, and climate change vulnerability of pastoral communities in Northwest Kenya

J. Schilling et al.

Title Page

Abstract

Introduction

Conclusions

References

Tables

Figures



Back

Close

Full Screen / Esc

Printer-friendly Version

Interactive Discussion



Table 1. Community expectations and level of satisfaction.

Community expectation for. . .	Level of community satisfaction in. . .	
	Lopii	Nakukulas
1. Employment	very low	very low
2. Water	medium	very low
3. Land compensations	very low	low
4. Education	low	medium
5. Company Payments	medium	low
6. Mitigation of inter-pastoral conflicts	very low	very low

Oil, conflict, and climate change vulnerability of pastoral communities in Northwest Kenya

J. Schilling et al.

Table 2. Motivation and capability of key actors.

	Turkana Communities	Tullow	Government National	County	Local	Pokot
Motivation	<ul style="list-style-type: none"> - Jobs with Tullow - Financial compensations for land - Improved water infrastructure - Improvements in schools and education - Avoiding of externalities of oil exploration - Increase of local economy - Decrease of violent conflicts 	<ul style="list-style-type: none"> - Smooth operations to explore oil resources - Avoiding of disruption and additional costs - Decrease of violent conflicts 	<ul style="list-style-type: none"> - Smooth and uninterrupted oil explorations - Revenues from oil exploration and potential exploitation - Decrease of violent conflicts 	<ul style="list-style-type: none"> - Revenues from oil exploration and potential exploitation - Decrease of violent conflicts 	<ul style="list-style-type: none"> - Financial Benefits and infrastructure improvements from oil exploration and potential exploitation - Increase of local economy - Decrease of violent conflicts 	<ul style="list-style-type: none"> - Financial compensations for land claimed by Pokot - Jobs with Tullow
Capability	<ul style="list-style-type: none"> - Local knowledge of communities and area - Weapons/ammunition - Manpower - Experience in attacks 	<ul style="list-style-type: none"> - Financial Means - Relations to and support of National government 	<ul style="list-style-type: none"> - Highest authority - Contract party with Tullow 	<ul style="list-style-type: none"> - Contact to local and national government 	<ul style="list-style-type: none"> - Contact to local communities and county government 	<ul style="list-style-type: none"> - Local knowledge of communities and area - Weapons/ammunition - Manpower - Experience in attacks

Title Page

Abstract

Introduction

Conclusions

References

Tables

Figures

⏪

⏩

◀

▶

Back

Close

Full Screen / Esc

Printer-friendly Version

Interactive Discussion



ESDD

6, 1163–1200, 2015

Oil, conflict, and climate change vulnerability of pastoral communities in Northwest Kenya

J. Schilling et al.

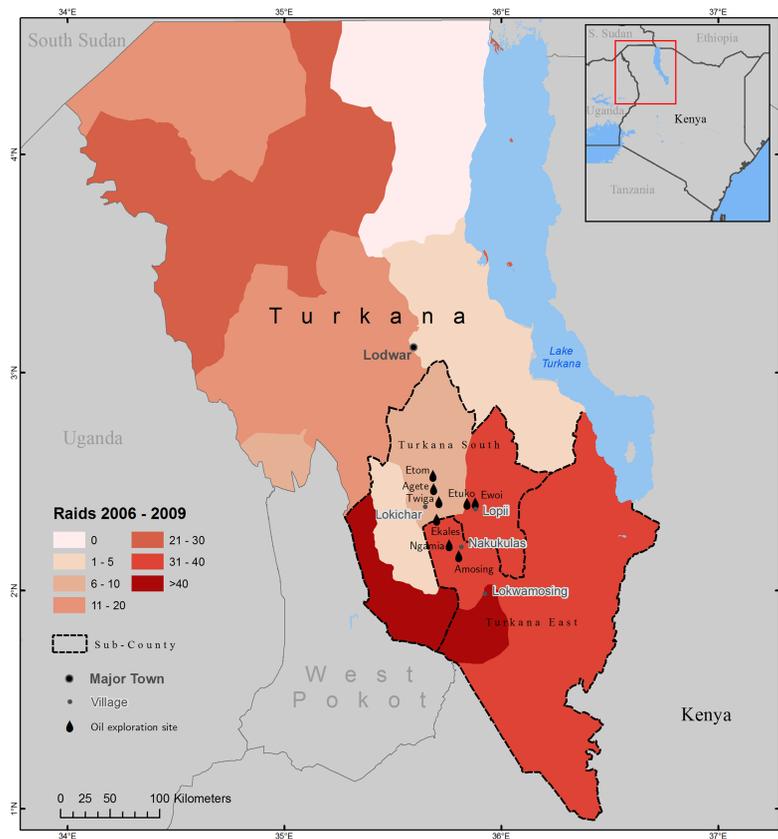


Figure 1. Research location, oil exploration and distribution of raids in Turkana (based on TUPADO, 2011; Tullow, 2014a).

Oil, conflict, and climate change vulnerability of pastoral communities in Northwest Kenya

J. Schilling et al.



Figure 2. Framework on conflict and cooperation (adapted from Schilling et al., 2012b).

Title Page	
Abstract	Introduction
Conclusions	References
Tables	Figures
◀	▶
◀	▶
Back	Close
Full Screen / Esc	
Printer-friendly Version	
Interactive Discussion	

Oil, conflict, and climate change vulnerability of pastoral communities in Northwest Kenya

J. Schilling et al.

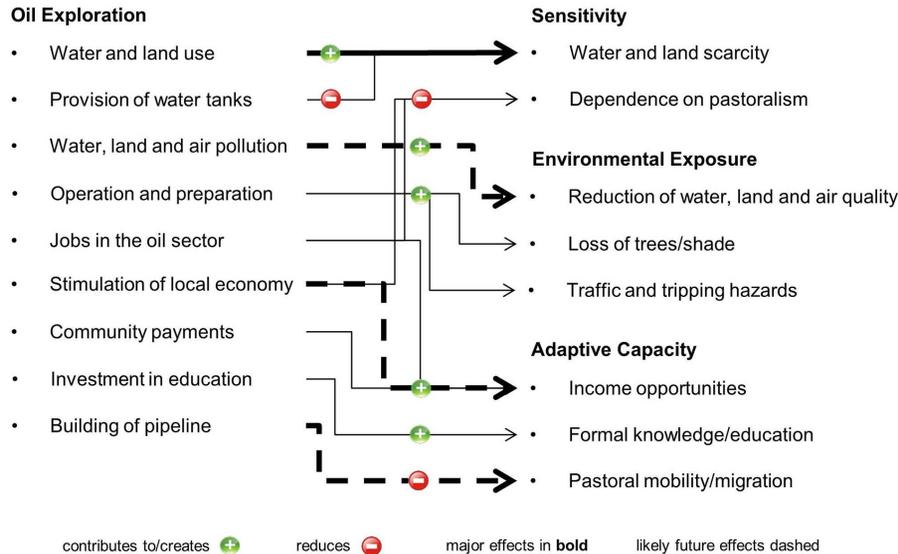


Figure 3. Effects of oil exploration on vulnerability of pastoral communities.

Title Page	
Abstract	Introduction
Conclusions	References
Tables	Figures
◀	▶
◀	▶
Back	Close
Full Screen / Esc	
Printer-friendly Version	
Interactive Discussion	

Oil, conflict, and climate change vulnerability of pastoral communities in Northwest Kenya

J. Schilling et al.

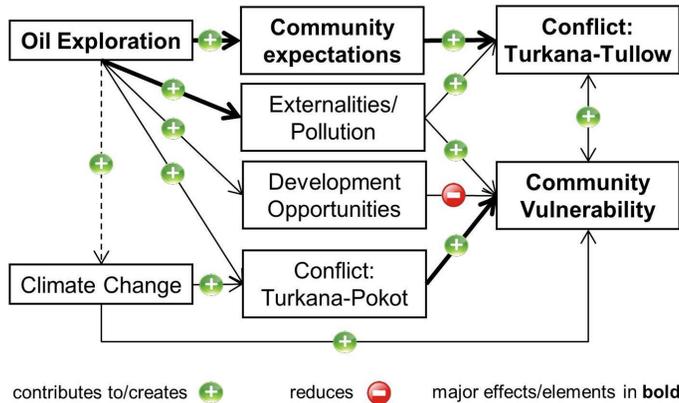


Figure 4. Key interactions between oil, conflict, vulnerability, and climate change.

Title Page	
Abstract	Introduction
Conclusions	References
Tables	Figures
◀	▶
◀	▶
Back	Close
Full Screen / Esc	
Printer-friendly Version	
Interactive Discussion	

