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Does Supply-Induced Scarcity Drive Violent Conflicts in the African Sahel? The Case of the Tuareg Rebellion in Northern Mali*

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According to the influential 'environmental security' literature, supply-induced scarcity in the form of environmental degradation is a key driver of civil violence around the world. African drylands, especially the Sahel region, are allegedly among the areas most seriously affected by this development. Views of desertification and severe environmental degradation in the Sahel are held by environmental security scholars, despite the comprehensive literature questioning such ideas that has been published since the late 1980s. Instead of being steadily transformed towards more desert-like conditions through increasing population pressure, Sahelian environments are dominated by climatic fluctuations. This article first reviews the literature criticizing the idea of 'desertification' as it is applied on African drylands. Then, the article critically discusses the use of the Tuareg rebellion in northern Mali as an example of a supply-induced scarcity related conflict. The case study shows that the droughts of the 1970s and 1980s played a role in the rebellion, but the rebellion was not driven by supply-induced scarcity. Instead, the droughts led to the migration of young men to Algeria and Libya, where they were exposed to revolutionary discourses. There was already a strong feeling among nomads and Tuareg in Mali of being marginalized by state policies of modernization and sedentarization. Embezzlement of drought relief funds by government officials in Bamako added further to the anger felt by the young men who took up arms against the Malian state. The drought of the 1970s and 1980s was probably not a necessary condition for the rebellion to take place. Detailed case studies of armed conflicts, engaging with environmental research, may be necessary to further deepen our understanding of links, or lack of such links, between violence and environmental stress.

'Environmental Security' in African Drylands

The idea that increasing 'environmental scarcity' is one of the root causes of violent conflicts in poor countries has formed an influential 'environmental security' narrative since the early 1990s, in both academic and policy debates.[1] Scarcity is believed to be rapidly increasing in many marginal environments, in particular, owing to ongoing processes of environmental degradation, driven primarily by escalating population

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[1] However, the idea of environmental scarcity is also problematic. One might question whether an environment in itself can be scarce. Resources can be scarce, but perhaps not environments. Hence, 'when, for instance, Homer-Dixon (1991, 1994) refers to "environmental scarcity", the terminology itself muddies the waters' (Gleditsch, 1998: 387).

growth. Popular writers, such as Robert Kaplan (1994, 1996) and Jared Diamond (2005), have been instrumental in spreading this message to politicians, as well as to the public at large. For instance, during the Clinton presidency, environmental scarcity views held a central position in the US government's understanding of causes of conflicts around the world (Peluso & Watts, 2001). The environmental security perspective has also come across strongly in, for instance, the September 2005 special issue of *National Geographic Magazine* devoted to Africa (see Moseley, 2005, for a critique). In academic research, groups within this field, in particular those based at the University of Toronto and the Swiss Peace Foundation, have been influential in driving the debate.

According to Thomas Homer-Dixon (1994, 1999), the leader of the environmental security group in Toronto, 'supply-induced scarcity', in the form of environmental degradation, is one of three sources of scarcity leading to armed conflicts.[2] African drylands are allegedly among the areas most seriously affected by environmentally induced conflicts, since land scarcity is already critical (Homer-Dixon, 1999: 63). For instance, according to Homer-Dixon (1999: 76–77), 'degradation of land resources' was an important factor behind the Senegal–Mauritania conflict in 1989.

The Swiss group has an even more pronounced focus on African drylands as 'crisis areas' (Bächler & Spillmann, 1996; Bächler, 1998). Referring to Oldeman, Hakkeling & Sombroek (1990), Bächler (1998: 66) states that

> desertification affects 3.6 billion ha, that is about 70 percent of potentially productive drylands, or nearly a quarter of the total land area of the world. … The most obvious impact of desertification is degradation of 3.3 billion ha of the total area of rangeland, constituting 73 percent of rangeland with a low potential for human and animal carrying capacity; decline in soil fertility and soil structure on about 47 percent of dryland areas constituting marginal rainfed cropland; and degradation of irrigated cropland, amounting to 30 percent of the dryland areas with a high population density and agricultural potential.

He continues by presenting the Sahel, the savanna belt south of the Sahara desert, as a typical example of where dryland degradation has created violent conflicts. In this area, pastoralism, rainfed agriculture and irrigated farming lead to 'erosion of the landscape' (p. 69). Furthermore, population pressure has increased the demand for fuelwood and allegedly led to increased degradation of the vegetation (pp. 67, 70), and livestock production is said to cause widespread overgrazing (p. 69). A list of 11 conflicts in African drylands presented in an appendix[3] (pp. 243–246) 'shows empirical evidence for correlations between dryland erosion, socioeconomic change, and violence in most Sahel countries' (Bächler, 1998: 70). The Senegal–Mauritania dispute is also mentioned as a conflict driven by desertification. In addition, Bächler refers to clashes in Chad and Darfur and the Tuareg rebellions in Niger and Mali as resource conflicts caused by environmental degradation. As we shall see, Kahl (2006) also refers to the Tuareg conflict in northern Mali as a conflict driven by supply-induced resource scarcity. The main idea put forward by both Bächler and Kahl seems to be that through environmental degradation, resources become scarce, and people then start fighting over them. But the concrete causal chain imagined in the case of the Sahel is not spelt out and, hence, remains vague.

[2] The other two sources of scarcity are 'demand-induced' (through increasing population pressure) and 'structural' (through unequal distribution). Fairhead (2001: 218) has criticized this terminology, saying that 'the three components of Homer-Dixon's "environmental security" are not facets of the same thing'.

[3] The conflicts mentioned are in Algeria, Chad, Ethiopia, Kenya, Mali, Mauritania, Namibia, Niger, Senegal, Somalia and Sudan.

'Environmental degradation' is a key independent variable in the environmental security literature. But surprisingly, this notion is rarely discussed. One often gets the impression that degradation is something measurable. However, as Blaikie & Brookfield (1987) pointed out, 'degradation' is a perceptual term, and there will therefore be a number of definitions in any situation. These different definitions originate from conflicting views regarding how the land should be used and what the landscape ought to look like. Hence, our norms and values are guiding our perception of environmental questions. Any discussion about whether or not an area is degraded inevitably involves actors' interests, values and power dimensions and relates to the links between science and policy. For instance, deforestation can maybe be measured in terms of loss of canopy cover or loss of tree density (although there are some methodological problems here as well, related to how to define a 'forest' and which trees and bushes to include), and soil erosion on a particular site can be measured. But whether this environmental change represents degradation or not, will also differ with the perception of the individual actors involved. A Western conservationist would tend to perceive any loss of forest cover in Africa as degradation, while the local farmers, who are actually clearing new land, would see this as land improvement, because they are extending the cultivated area in order to increase local food security.

Views of desertification and severe environmental degradation in the Sahel are presented by environmental security scholars, despite the comprehensive literature that has been published since the late 1980s criticizing such ideas. By focusing on the Sahel in this article, I will first review some of the literature that questions the idea that this region is continuously going through severe processes of environmental degradation and desertification. This critique is well known among geographers, political ecologists and environmental historians, but such a review would still be necessary in order to demonstrate how out of tune the environmental security literature is with environmental research. The lack of engagement of environment security scholars with environmental scholarship and a biased reading of the literature, neglecting studies that do not fit their model, reinforce a general impression of a superficial understanding of environmental change. Furthermore, I critically discuss the use of the case of the Tuareg rebellion in northern Mali as an example of a supply-induced scarcity-related conflict.

Desertification in the Sahel: A Brief Review

It is often said that the French botanist André Aubreville (1949) coined the term 'desertification'. He used it to describe how 'deserts are being born today under our very eyes'. In his book of 1949, he claimed that forest areas in West Africa were continuously being converted to savanna, and the savanna to desert. However, as recently pointed out by several authors (Mainguet, 2003; Benjaminsen & Berge, 2004; Davis, 2004), 'desertification' was already in use by colonial scientists early in the colonial period. For instance, the director of the French colonial forest service in Madagascar, L. Lavauden, who had also worked in North Africa, had already used this term in the 1920s (Lavauden, 1927). At the time, he saw desertification as a relatively new phenomenon caused by human activity. Lavauden also claimed that to stop the desertification process north of the Sahara would require the implementation of strict forest and pastoral policies, including the planting of trees, restricting grazing, waging a battle 'without mercy' on bush fires and establishing protected reserves. He saw desertification as even more precarious south of the Sahara, because there the French had to deal with

'a primitive population, who are not capable of understanding the purpose of rules'.

In the 1930s, the focus on desertification was further increased because of a drought (1930–32) in the Sahel that occurred at the same time as the 'Dust Bowl' in the United States. The American Dust Bowl triggered worldwide concern about soil erosion and desertification (van Beusekom, 1999) and had an enormous influence on the agricultural policies in West, East and Southern Africa (Anderson, 1984). It caused colonial agricultural officials throughout Africa to look for signs of soil erosion.

But later, in the 1950s, there was an unusual amount of rainfall in the Sahel, and new forests regenerated. This led to a decreased focus on the problem of desertification. However, from the 1960s, the amount of rainfall declined, with the lowest amounts measured during the drought disasters around 1972–73 and 1983–84, and the problem of desertification was again put on the international political agenda. There was general agreement that the desert was spreading, but it was still seen as necessary to get a measurement of how quickly the process was going, by obtaining more data. In 1975, the ecologist Hugh Lamprey was assigned by the United Nations Environment Programme (UNEP) to investigate this process more closely. He chose a case study area in Sudan. Using a comparison of the ground as seen from a light aircraft with a vegetation map from 1958, he concluded that the Sahara had expanded south by 90 to 100 kilometres from 1958 to 1975, in other words, about 5 to 6 kilometres per year (Lamprey, 1988). What he actually did was to compare the extent of the desert in the exceptionally wet 1950s with the conditions in the middle of the drought of the 1970s.

However, these estimates were given enormous attention. Many of the estimates still used today quantifying how fast the desert is spreading stem from this survey. It has since been directly or indirectly referred to by reporters and aid officials and has even found its way into school curricula. In some cases, probably for educational reasons, the rate of desertification has been converted to 60 soccer fields per minute.

Researchers at the University of Lund, in Sweden, later studied the same area that Lamprey flew across in Sudan, but they were not able to find any evidence for desert encroachment (Helldén, 1991). For instance, Olsson (1984: 3) wrote: 'no woody species has been eradicated from the area, no ecological zones have shifted southwards and the boundaries between different vegetation associations appear to be the same now as they were 80 years ago'. Confirming this view, Helldén (1991: 379) concluded: 'There was no trend in the creation or possible growth of desert patches around 103 examined villages and water holes over the period 1961–1983'. In a similar study, using satellite imagery to study vegetation changes around deep wells in the Ferlo region in Senegal, Hanan et al. (1991) found no consistent relationship between primary production and proximity to a well.

Large-scale and generalized claims about desertification and environmental degradation are usually based on aggregated data with poor reliability. The study by Mabbutt (1984), also carried out for UNEP, represents one such aggregated study. It has also been one of the main sources referred to by proponents of the desertification thesis. It claimed that 35% of the land surface of the Earth is threatened by desertification, affecting 470 million people. The study mainly consisted of a questionnaire survey distributed to government officials in a number of countries. In Africa, the questionnaires were filled in during a severe drought (Nelson, 1988; Rhodes, 1991). In addition, there is considerable uncertainty about the qualitative categories that the respondents were asked to use in classifying the extent and

seriousness of desertification in their country ('moderately desertified, severely desertified', etc.).

Another such aggregated study, which is often referred to in the debate on whether environmental scarcity leads to increased levels of conflict (by e.g. Homer-Dixon, 1994, 1999; Bächler, 1998; Hauge & Ellingsen, 1998; Theisen, 2008), is the Global Assessment of Soil Degradation (GLASOD) (Oldeman, Hakkeling & Sombroek, 1990), which was also commissioned by UNEP. The study claimed that 22.5% of the world's agricultural land, pasture, forest and woodland had been degraded since about 1950; 3.5% is seen as severely degraded, 10% as moderately degraded and 9% as lightly degraded. Unfortunately, these figures and the whole GLASOD methodology are problematic (Olsson, 1993). The study was not based on primary research and data collection in the regions most severely affected but, rather, it relied on estimates and, sometimes, guesses. In fact, the GLASOD study is a compilation of the views of over 250 different experts, and a serious methodological problem arises when comparing the opinions from these 250 individuals, all with potentially different perceptions of the problem and its definitions and maybe also with different political agendas (Olsson, 1993). Hence, the study presents itself as a quantification of desertification and soil degradation, while in fact it is a quantification of qualitative assessments (Thomas & Middleton, 1994). By being based on expert opinions, the GLASOD study conserves traditional views on land degradation, instead of shedding new light on a controversial issue (Olsson, 1993). The findings of GLASOD 'are an order-of-magnitude best guess. The real figure could be ten times greater or ten times less' (Pearce, 1992: 42).

The claims of widespread degradation and desertification by the Mabbutt and GLASOD surveys have later been undermined by a number of studies. For instance, scientists at the National Aeronautics and Space Administration (NASA) in the USA have studied satellite images of the southern limits of the Sahara. The conclusion is that the edge of the desert moves back and forth as a direct result of annual rainfall (Tucker, Dregne & Newcomb, 1991; Tucker & Nicholson, 1999). Nothing indicates that human activity on the ground in the Sahel has any influence on these movements.

Furthermore, a number of studies published from the late 1980s led researchers to increasingly question the idea of desertification in the African Sahel. Some of this research was reported by *New Scientist* in an article entitled 'The Myth of the Marching Desert' (Forse, 1989). The role of UNEP in trying to maintain this myth, despite the lack of scientific evidence, was also severely criticized in the article. This research led to what has been termed a paradigm shift in drylands research (Warren & Khogali, 1992; Behnke & Scoones, 1993; Benjaminsen, 1997). It recognizes the resilience and variability of drylands and stresses the need for flexibility in coping with a highly unstable environment. These ideas have led to the questioning of ecological theory based on notions of equilibrium, carrying capacity, succession and climax as applied on tropical drylands. Instead, non-equilibrial ecological theory states that the vegetation in drylands varies with the annual rainfall and that external factors such as climate, rather than livestock numbers, tend to determine the vegetation composition and cover (Ellis & Swift, 1988; Behnke, Scoones & Kerven, 1993). Moreover, unavailability of forage in bad years may depress livestock populations to the point where the impact of grazing on vegetation is minimal (Sullivan & Rohde, 2002). Therefore, in areas of fluctuating climates, rainfall, rather than density-dependent factors related to herbivore numbers, may ultimately be the most significant variable

determining herbivore populations. Wet season pastures such as in the West African Sahel, with its short rainy season, domination of annual grass species and high resilience, would be a typical example of a non-equilibrial system (Hiernaux, 1993; Turner, 1993, 1998; Benjaminsen, 1997). The herders' use of pastures is adapted to the seasonal changes in these drylands. During the rainy season, when the grass grows, herders often move and therefore exercise little pressure on the vegetation (Hiernaux, 1993).

Then, given all this research, why has the desertification narrative been so 'sustainable' or robust? Warren & Agnew (1988) argue that development aid organizations working in the Sahel present the image of an advancing desert in order to sustain the level of aid, as well as the organizations themselves. In addition, for governments in the Sahelian countries, desertification has served to distract attention from problematic political issues:

> On August the 4th 1984, the late President Kountche of Niger urged his countrymen to join 'the fight against the advancing Sahara' in order to avoid the humiliation and disgrace of desertification. He used the occasion to crack down on merchants who stole food-aid and slack civil servants, and to sack 30 traffic police. On April the 15th 1985 in announcing even more draconian measures against desertification, he shelved plans to liberalize the domestic political system 'in the face of the more pressing problem of how to feed the population' … 'We cannot talk politics on empty stomach', he said [quotation from Agence France Presse]. [He] called on Niger citizens to step up their fight against the advancing Sahara desert…. The idea of desertification was serving him well. (Warren & Agnew, 1988: 8)

In a similar vein, Hoben (1996) has demonstrated how the government and Western donors in Ethiopia during the 1970s and 1980s used and exaggerated a crisis narrative for their own goals. The regime needed food aid mainly to feed the army, and

> Western donors and NGOs needed a narrative that would give them a rationale for justifying the continuation of food aid to Ethiopia, … the idea that the underlying cause of Ethiopia's periodic famines was environmental degradation due to population increase, poverty and poor farming practices had great appeal. It provided the justification for a massive food-for-work programme supporting local-level reclamation projects. (Hoben, 1996: 195)

Roe (1991, 1995) says there are some stories or narratives about the environment and development in Africa that have proven to be resistant, despite strong empirical proof against their storyline. These stories are actively used by strong actors that, for different reasons, are interested in keeping the belief in a story such as 'desertification' alive.

Swift (1996) explains the popularity of the desertification narrative and its robustness with the fact that it met a need for some actors, especially national governments in Africa, international aid bureaucracies (UN agencies and some bilateral donors) and some scientists. First, national governments (and colonial authorities before them) have used the myth about desertification created by humans to justify government control of land and resources. If farmers and nomads are not able to manage the land on their own, the idea goes, governments have to do it for them. In addition, large parts of the aid industry have used the image of the spreading desert to collect funds, especially for planting trees. Finally, some scientists have their own interests in mind when they present an image of general deterioration of the environment in the Sahel, by using this image to argue for increased funding of research of the environmental problems in the area. These three groups of actors are, according to Swift, the winners emerging from anti-desertification policies. The losers are the farmers and pastoralists in the Sahel who have had to carry the costs of stricter environmental policies that have resulted in fines and restrictions.

The emphasis on desertification by UNEP is an example of the consequences of

the unequal power relations in the political ecology of the Sahel. In the years following the establishment of UNEP in the mid-1970s, desertification was defined as the organization's most important focus area. In 1977, UNEP organized the UN's desertification conference in Nairobi, and, in 1979, one of UNEP's directors proclaimed that desertification represented 'the greatest single environmental threat to the future well-being of the Earth'.[4] Swift (1996) says that the desertification narrative was so well received by environmental and aid organizations because it was viewed as non-political and, not least, because a focus on desertification would not have any powerful losers; the losers would be only poor African farmers and pastoralists. Other important environmental policy themes connected to Western lifestyle and consumption, international trade and industrial production did not receive near the same level of attention in UNEP. Strong opponents, such as Western industry and governments, were not interested in UNEP focusing on such problems.

The robustness of the desertification narrative was illustrated by its incorporation into the official justification for awarding Wangari Maathai the Nobel Peace Prize in 2004:

> We are all witnesses to how deforestation and forest loss have led to desertification in Africa and threatened many other regions of the world – also in Europe. Protecting forests to stop desertification is a major step towards strengthening our common global environment. (Norwegian Nobel Committee, 2004)

Furthermore, at the occasion of the World Day to Combat Desertification and Drought (17 June) and the observance of the International Year of Deserts and Desertification in 2006, UN Secretary-General Kofi Annan stated:

> Desertification – the loss of the land's biological productivity in arid, semi-arid and dry sub-humid areas – is one of the most serious threats facing humanity. It is a global problem, affecting one fifth of the world's population in more than 100 countries. And it has far-reaching consequences. In a terrible spiral, it is partly caused by poverty, and exacerbates it. (Annan, 2006)

Finally, it should be noted that even though there is no evidence to claim that local human activity in the Sahel causes desert encroachment, global warming might, in the long term, lead to reduced rainfall in the region. More arid conditions would obviously cause desert expansion over time. However, there is currently considerable uncertainty about current rainfall trends in the Sahel; see Hulme (2001) and Chappell & Agnew (2004) for contrasting views on this.[5]

The Tuareg Rebellion in Northern Mali, 1990–96

As already mentioned, according to Bächler (1998), the Tuareg rebellion in northern Mali is one example of a resource conflict caused by environmental degradation. In a more recent book, Kahl (2006: 234) supports this view, claiming that, in northern Mali, 'the combination of population pressures, poor land use practices, and a fragile ecology has made soil erosion, desertification, and freshwater scarcity serious problems'. He then goes on to assume that what he terms 'demographic and environmental stress' (DES) was a significant factor behind the Tuareg rebellion. DES is seen as a composite independent variable that, through two different pathways ('state failure' and 'state exploitation'), can lead to violence.

[4] 'Desertification … is probably the greatest single environmental threat to the future well-being of the Earth' Peter Shaw Thacher, Deputy Executive Director of UNEP (Thacher, 1979).

[5] On the other hand, a potential long-term rainfall decline in the Sahel would have a negative impact on the economy, which again could raise the level of civil strife. According to Miguel, Satyanath & Sergenti (2004: 746), 'economic conditions are the most critical determinants triggering civil conflict in Africa'.

The conflict in northern Mali caused the death of some thousand people – it is unknown exactly how many – and the displacement of about 250,000 refugees to neighbouring countries such as Burkina Faso, Mauritania and Algeria (Lecocq, 2004). In this section, I will critically discuss the idea of DES being a cause of the conflict. First, I present studies of environmental change in the area, and second, I give the background to the conflict. Thereafter, I briefly summarize its history, and finally, I discuss alternative explanations for the rebellion.

My background for this case study is that, during 1987–92, I participated in an interdisciplinary research programme in northern Mali.[6] While my own research focused on environmental issues, our research programme was, from the first rebel attack in Menaka in June 1990, considerably affected by the escalating conflict.[7] In addition to relying on the literature that has been published on this conflict, the following case study is based on my own notes from interviews, discussions and observations in northern Mali during the conflict and my personal archive of newspaper cuttings, press releases and other documents from this period.

Northern Mali and Its Environment

The geographical region of northern Mali can be loosely defined as the desert areas in the far north of the country, including the area around the bend of the Niger River[8] (Figure 1). Annual rainfall increases towards the south reaching 400–500 mm at the southern fringes of the region. The main ethnic groups in the area are the pastoral Tuareg[9] and Moors (or Arabs) and the sedentary Songhay. The latter mainly cultivate floating rice along the Niger River as well as rain-fed millet in the southern parts of the region. North of the river, the Tuareg dominate east of Timbuktu, while the Moors are more numerous towards the west. South of the river, the Tuareg dominate, but there are also groups of pastoral and agro-pastoral Fulani in the southern parts.

In northern Mali, rain falls between June and September in 10 to 30 heavy showers. The high variation in rainfall in time and space is closely linked to the two main features of the Sahelian ecosystem; instability and resilience. While instability is the result of the variations in rainfall from year to year, resilience implies, in the Sahelian case, that the grass cover especially, which is dominated by annuals, has a high capacity to recuperate after drought or heavy grazing. Research undertaken by the International Livestock Research Institute (ILRI) in northern Mali during the 1980s and 1990s demonstrates this (Hiernaux, Diarra & Maiga, 1990; Hiernaux, 1992, 1993; CIPEA, 1993). The risk of ecological overgrazing is limited to a short period in time, which is in the short growing season before the seeds fall to the ground. In fact, instability and resilience support the continued practices of transhumance in the southern Sahel and nomadism in the northern Sahel (Hiernaux, 1993). Both these methods of utilizing resources are based on mobility and maximal dispersion during the growing season. While in good years, nomads stay within a relatively limited

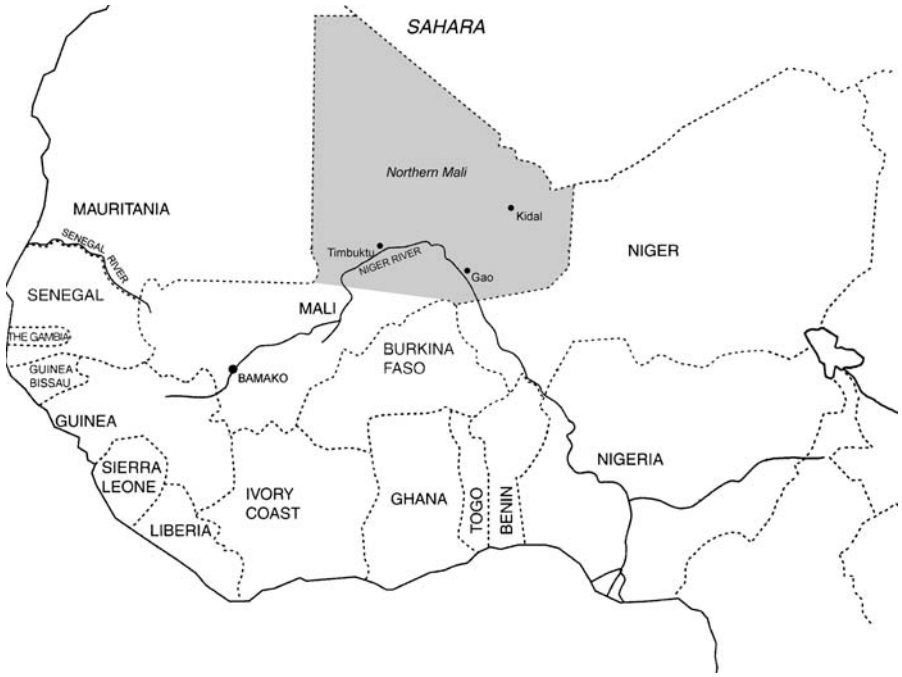
[6] This was a cooperative programme between the University of Oslo and the Centre National de Recherche Scientifique et Téchnologique in Mali. It was funded by the Norwegian Ministry of Foreign Affairs.

[7] Two Malian researchers in the programme were in fact victims of the first attack in Menaka; one was injured and the other, Mohammed Ag Bendech, himself a Tuareg, was kidnapped and released in Algeria six months later. Thereafter, he spent a few weeks with his Norwegian colleagues in Oslo before he travelled with us back to Mali in February 1991. Through our work in northern Mali, we also came to know people who played various roles in the conflict; some became rebel leaders, some escaped to neighbouring countries as refugees, some were taken as hostages by the rebels, and some were sadly executed by the army because they were at the wrong place at the wrong time.

[8] Northern Mali is often also called Azaouad or Azawad.

[9] The Tuareg call themselves Kel Tamasheq, which means 'the people who speak Tamasheq'.

Figure 1. Northern Mali



area, they have to move more during drought years to find water and pastures. Northern Mali has been hit by drought several times during the 20th century, most importantly in 1903, 1913–14, 1930–32, 1944–48, 1972–75 and 1982–87 (Benjaminsen & Berge, 2004).

Owing to high quality pastures and the marginality of the area for rain-fed farming, the northern Sahel has a comparative advantage for pastoral production. When resources are unstable, unpredictable, transitory, but resilient, it pays to have a strategy based on flexibility and the ability to move and to use the resources as long as they are available. Following this line of thinking, investment in land productivity in this sparsely populated area is not such a good idea, because it is too risky, unless the environment can be controlled. In practical terms in northern Mali, such control would normally imply irrigation by the river. However, irrigation with full control of the water level in the fields is still beyond the scope of the populations of northern Mali, because of lack of capital and, in many cases, available labour. Hence, while rice cultivation has a high potential, it is often considered too risky by, for instance, Tuareg who may hold land along the river, but who usually choose to invest labour in herding instead of cultivation (Pedersen & Benjaminsen, 2008). Rice farming is also increasingly competing with *burgu*, a fodder plant that grows in the river and is used by pastoralists as a key dry season resource. Many burgu fields have been converted to rice plots as a consequence of decreased flooding of the Niger River due to droughts and hydropower development in southern Mali.[10] Burgu grows on deeper water than rice, and when the water level decreases, rice fields tend to 'creep' down the riverbed, as it were, and encroach on burgu fields. In this way, a key resource and grazing

[10] In particular, the Sélingue dam in southern Mali constructed in the early 1980s.

reserve during the dry season for the pastoralists is diminishing. Conflicts between pastoral Tuareg and sedentary Songhay farmers often follow such conversions.[11]

Northern Mali is commonly viewed as the region in the country that is worst hit by desertification. In addition to overgrazing, the use of fuelwood has often been presented as a cause of desertification in the region (DNEF, 1985; TransEnerg, 1985; UNDP & World Bank, 1992). However, a study of household fuelwood use showed no relationship between deforestation and local fuelwood consumption in the area (Benjaminsen, 1993). Indeed, the vast majority of the fuelwood harvested was collected from dead trees, and the deforestation that was observed was attributed to drought, because the decrease in rainfall in the early 1980s increased the mortality of trees (Benjaminsen, 1996). Although wood collection distances are increasing, as is money spent on fuelwood, over the region as a whole, there is no physical scarcity of dry wood. However, since collection distances are increasing, there may be an economic scarcity in some villages in the way that the household's access to labour or to income limits its access to fuelwood.

Background to the Rebellion

On 28 December 1893, the first French troops entered Timbuktu and claimed this desert town as French possession. This was the end point in the occupation of French Sudan, which was formally established as a colony in 1895. However, Tuareg resistance to the colonial occupation continued, leading to a number of bloody battles before Tuareg chiefs finally surrendered in 1917.

In 1960, Mali gained its independence, and the country's first president, Modibo Keita, was inspired by socialist ideas of industrialization and agricultural modernization. Nomadism was looked upon as an obstacle to such modernization and development in general. Keita argued, for instance, that sedentarization of nomads was important in order to develop the new nation and to convert nomads into 'productive' citizens by having them take up farming (Benjaminsen & Berge, 2004). Hence, the nomadic way of life was considered backward, unproductive and undesirable. This led pastures in northern Mali to be labelled 'le Mali inutile' ('the useless Mali'), and the modernization policy that followed was perceived by Tuareg as a new form of colonization; this time from southern Mali. Furthermore, this policy led to the marginalization of nomads, which, according to Lecocq (2004), was the main cause of the Tuareg revolt that broke out in the Kidal area in 1963. In fact, according to Ag Baye (1993), through frequent confiscations, humiliations and violence the new Malian administration was even more hostile to the Tuareg than the French administration had been. One of the results of this policy of marginalization of nomads was that many Tuareg did not develop a feeling of being Malian (Poulton & Ag Youssouf, 1998). This marginalization, in addition to the taxes nomads had to pay without receiving any benefits, precipitated the revolt of 1963, argues Ag Baye (1993). The revolt in Kidal was severely crushed through the use of fighter-bombers and public executions, which led many Tuareg to migrate to Algeria and Libya (Ag Baye, 1993).

The new military government of Moussa Traoré (from 1968) continued the anti-nomad policy. Although Traoré's various governments usually included a 'token' Tuareg minister, northern Mali had little influence over national and local politics during his reign, and the region was under military governorship for most of this period (Poulton & Ag Youssouf, 1998). Many Tuareg perceived this as a form of military occupation. In addition, the single

[11] For studies that analyse farmer–herder conflicts in West Africa as more than just resource conflicts, see Bassett (1988) and Turner (2004).

party established in 1979, the UDPM (Union Démocratique du Peuple Malien), promised local representation and democracy, but instead 'became a vehicle for decentralized plunder across the country' (Poulton & Ag Youssouf, 1998: 27). The Forest Service and its forest agents here played a key role (Benjaminsen, 1993, 1997, 2000; Laris, 2004). While the effects of this plunder were felt throughout the country, in northern Mali it added to the resentment towards the government among the pastoral populations.

The Forest Service in the former French colonies is a paramilitary organization whose primary mandate has been to enforce conservation of natural resources through a system of permits for use and fines for rule violation. Influenced by the rise of international environmentalism and to impress donors of foreign aid, the colonial forest law was revised in 1986 and was made even more severe, introducing extremely high fines compared with the income level in Mali. In fact, President Traoré became a concerned 'environmentalist' during the increased international focus on environmental issues in the 1980s (Ribot, 1995). The fact that Malian environmental policy became stricter in this period must again be seen in relation to the revival of the desertification narrative. The Forest Service generally justified its plunder of farmers and pastoralists by stressing the importance of halting the advance of the desert. Forest agents were also allowed to keep a percentage of the fines collected, which further encouraged their rent-seeking activities.

Because of this policy of harassment and the lack of dialogue with the local communities, there has been a general antagonism between the Forest Service and rural people throughout Mali. However, after the political revolution of March 1991, the coup d'état against Moussa Traoré and the introduction of multiparty democracy, this antagonism has been attenuated, although it is still there.

The droughts of the mid-1970s and 1980s also played a role in the marginalization of the pastoral Tuareg. First, many people, especially men, migrated to neighbouring countries and urban areas in North or West Africa to look for work (Lecocq, 2004). Second, the Tuareg rebellions in both Niger and Mali were reactions against embezzlement by government officials of international relief aid destined for the drought-stricken people of the northern Sahel (Klute, 1995). Many of these funds were instead used for the construction of private 'chateaux de la sécheresse' ('drought castles') in the wealthier parts of Bamako popularly known as 'million-bougou' ('bougou' means 'village' in Bambara; hence 'the village for millionaires') (Bourgeot, 1990).

In Algeria, young Tuareg secretly organized themselves, while in Libya, there was active support from Ghadaffi, and several hundred Tuareg joined the military, many of whom came from the Kidal area. A number of these soldiers got experience from active warfare in Palestine, Lebanon and Chad, fighting in Ghadaffi's army. The planning of the rebellion started among these people who had gone into exile in the 1970s. The start was planned for the early 1990s, but was set off by certain events, such as the forced repatriation of exiled Tuareg from Algeria and the massacre by the army of civilian Tuareg in Tchin Tibaraden in Niger in May 1990.[12] In fact, the rebellion had been started by so-called *ishumar* (from the French 'chomeur' meaning unemployed person). The ishumar were men who had migrated to the Maghreb during the droughts of the 1970s and 1980s and been influenced by the revolutionary discourses in these countries, especially in Libya. In the Maghreb, they had worked as salaried labourers, mostly in urban areas, as smugglers and as soldiers, and had also experienced

[12] This part is based on my own interviews, carried out in spring 1991 in northern Mali.

unemployment. They focused on the need to modernize Tuareg society and to obtain political independence (Lecocq, 2004). This led them to also be critical of the older traditional Muslim and Tuareg leaders whom they saw as beneficiaries of the status quo. On this point, there was an agreement with the other main group of Tuareg intellectuals; the so-called *évolués*. They were urban-based, often Western educated and used French as their main language of communication, in addition to Tamasheq. Many évolués were initially not supporters of a rebellion, but as the conflict got out of control, some of them joined rebel groups in order to contribute to a peaceful solution (Poulton & Ag Youssouf, 1998). In this way, the *mouvements* soon had évolués in leading positions, because they were better able to communicate and negotiate with their Malian counterparts in the army and government.

The first attack took place on 28 June 1990, when a group of about 50 Tuareg rebels took the prison in Menaka, close to the border to Niger, and stole large numbers of weapons, in addition to 12 four-wheel-drive vehicles from NGOs. Six Tuareg from Niger who had been jailed after fleeing the repression there were freed, while 14 people were killed in this attack, including four Malian soldiers. The attack unleashed a campaign of indiscriminate violence from the Malian army against nomads. Civilians who had never even heard of any rebels were massacred (Poulton & Ag Youssouf, 1998). 'Within a few weeks the Malian army had created hundreds of new "rebels", as Tuareg youths fled into the hills to escape massacre' (Poulton & Ag Youssouf, 1998: 56). In addition, the army made no distinction between the Tuareg and the Moors, turning the latter into rebels too. Hence, the 'Tuareg rebellion' was not just Tuareg any more but had been turned into a nomadic or pastoral revolt.

Simultaneously with the escalation of the conflict in northern Mali, the democracy movement in Bamako was gaining force. Realizing that a rapid victory in the north was not within reach and that he might need the troops in Bamako, President Traoré initiated peace negotiations. In September 1990, Traoré travelled to Djanet in Algeria to meet with the heads of state of Algeria, Niger and Libya. Ghaddafi famously attended this meeting dressed as a Tuareg. While this gave a clear signal of Libyan support to the rebels, Traoré still hoped he could control the rebels through traditional Tuareg chiefs whom he had co-opted into the single party (Poulton & Ag Youssouf, 1998). However, as mentioned, the ishumar especially, but also, to some extent, the évolués, were critical of the role played by the traditional chiefs. But, towards the end of 1990, direct talks between the government and rebel leaders were initiated, which resulted in the government signing the Tamanrasset Peace Treaty, on 6 January 1991, with the two rebel movements, MPA (Mouvement Populaire de l'Azaouad) and the Moor-based FIAA (Front Islamique Arabe de l'Azaouad). The key point in this treaty was an agreement to give northern Mali a 'special status', which implied that 47.3% of the national budget should be allocated to the north. This treaty reflected the position officially taken by both the government and rebel groups in implying that the root cause of the rebellion was a general underfunding of northern Mali compared to the rest of the country. This position was taken in order not to alienate the Songhay population. However, the text of the treaty was kept secret, and the government probably agreed to more than it would have been able to carry out. This secrecy and uncertainty led many in the sedentary Songhay communities to become suspicious of the motives and aims of the rebels. They increasingly feared they would have to pay the price of peace without being consulted (Lode, 1997).

After demonstrations for democracy in Bamako in which troops killed about 300

demonstrators, some officers, led by Amadou Toumani Touré (nicknamed ATT), took control and toppled the Traoré government in the early morning of 26 March 1991. The officers initiated talks with the democracy movement, and ATT became president of an interim government until parliamentary and presidential elections were held in May/June 1992, when Alpha Oumar Konaré was elected as the new president.

However, after the fall of the Traoré government, some banditry by armed rebels continued, and the transitional government was not able to control the army, which led to more violence against civilians and many people fleeing to neighbouring countries. A series of meetings culminated in a National Pact, which was signed on 11 April 1992 in Bamako by the government and the MFUA (Mouvements et Fronts Unifiés de l'Azaouad).[13] However, sporadic violence continued in the north, and the army was still not under control, leading to more clashes. During April–July 1992, some 50 armed attacks were carried out by rebels. This led to retaliations carried out by civilians on civilian Tuareg and Moors and their properties, especially in the urban areas.

In May 1994, Ganda Koy was formed. This was a Songhay-based armed group with close links to the military. In addition to self-defence, Ganda Koy had a clear aim of terrorizing nomads (Lode, 1997). FIAA threatened to disarm Ganda Koy by force if the government did not do it. Since this was clearly not the army's intention, FIAA attacked the Ganda Koy base in Fafa killing a number of Ganda Koy militants. This event has later been seen as the turning point in the conflict. Returning from the battle, FIAA vehicles ran up against an army patrol that opened fire. While some FIAA fighters died in this incident, Zahaby Ould Sidi Mohammed, an évolué who had become the spokesperson for all the rebel groups and who had signed the National Pact on behalf of MFUA, managed to escape to Algeria.[14] Zahaby, who had been presented in the Malian press as public enemy number one, was now out of play, and this led other rebel leaders to take initiatives towards peace (Poulton & Ag Youssouf, 1998). In addition, in late 1994, the government reshuffled the armed forces, appointed a new minister of defence and withdrew military units that were associated with bad discipline and excessive use of force. From October/November 1994, the president seems to have been in control of the army and, from then on, left the peace process to be worked out by civil society. From November 1994 to June 1995, a number of public meetings were organized by local leaders or by rebel groups. These discussions calmed down the situation and prepared the ground for intercommunity meetings, facilitated through assistance from the UNDP, the Norwegian government and a group of Malian facilitators headed by Kåre Lode from Norwegian Church Aid (see Lode, 1997; Poulton & Ag Youssouf, 1998; Storholt, 2001). From August 1995 to March 1996, 37 intercommunity meetings were held. Interestingly, these discussions totally sidestepped rebel leaders, as well as the army and top government officials, creating conditions for peace at the grassroots. The whole process culminated in the 'Flamme de la Paix' ceremony in Timbuktu on 27 March 1996, where 3,000 hand weapons collected from the rebels were burned.

Looking back at the history of the rebellion and the events pre-dating it, we can conclude that the main reason for the Tuareg uprising was a policy of modernization where

[13] There were now four rebel organizations that had joined forces under the MFUA umbrella.

[14] Before joining the rebellion in 1991, Zahaby was the Deputy Director of the Norwegian Church Aid's programme in northern Mali, as well as a PhD student of land-tenure issues at the Sorbonne University in Paris. Today, he works for the UNDP in Nairobi.

there was no place for a nomadic lifestyle, combined with what was felt as a new form of colonization after independence, this time from southern Mali. Despite the lack of sustainable alternatives in the northern Sahel, nomadic pastoralism was perceived by colonial administrators and even more so by the Malian government after independence as a vestige from earlier times that one should do away with. This lack of appreciation for pastoral life and production, the lack of self-determination and involvement in political life, and the fact that northern Mali was governed from the south are clearly the root causes of the rebellion. The droughts of the 1970s and 1980s also played a role, but perhaps not in the way environmental security scholars such as Bächler and Kahl would have it.

The droughts created a temporary crisis in local production systems, those based on both farming and pastoralism. This crisis led many young Tuareg men to migrate to neighbouring countries in the Maghreb, especially to Algeria and Libya, where they were exposed to revolutionary discourses. In addition, embezzlement of international drought relief funds by government officials in Bamako added to these young men's anger. Hence, it was not a supply-induced scarcity of natural resources created by drought or desertification that unleashed the rebellion. The drought created the migration, which happened to gather young potential rebels, but it might not even have been a necessary condition for the rebellion to take place. After all, the 1963 rebellion took place after a humid period.

There is increasing competition for land along the Niger River between Songhay rice farmers and Tuareg pastoralists who need burgu as a feed reserve for the dry season. This competition has created a number of land conflicts that have sometimes caused violent incidences. However, this type of demand-induced conflict did not play a role in the rebel logic behind the uprising. In fact, the rebellion was started by young people from the Kidal area, far from the river. In addition, most Tuareg using land along the Niger River never joined the rebellion because, despite their differences, they felt closer to their Songhay neighbours along the river than to the rebelling Tuareg from the mountains of Kidal (Poulton & Ag Youssouf, 1998).

Conclusions

An extensive literature exists today undermining the idea that environments in the African Sahel are continuously subject to processes of degradation and desertification. Instead of being steadily transformed towards more desert-like conditions through increasing population pressure, these environments are dominated by climatic fluctuations. However, despite this literature, environmental security scholars continue to explain civil violence in African drylands by environmental stress caused by a growing population.

Through the presentation of a case study of the Tuareg rebellion in northern Mali, I illustrate how flawed and superficial such an environmental security approach may be in understanding this type of conflict. The droughts of the 1970s and 1980s played a role in the rebellion, but not through the creation of supply-induced scarcity. Instead, the droughts led to the migration of young men to Algeria and Libya where they were exposed to revolutionary discourses. There was already a strong feeling among nomads and Tuareg in Mali of being marginalized by state policies of modernization and sedentarization. Embezzlement of drought relief funds by government officials in Bamako added further to the anger felt by the young men who took up arms against the Malian state. The first Tuareg revolt in Mali in 1963, which erupted after a humid period,

indicates that drought might not have been a necessary condition at all for the second rebellion to take place. Finally, this article indicates that detailed case studies of armed conflicts engaging with environmental research may be necessary to further deepen our understanding of links, or lack of such links, between violence and environmental stress.

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