

Arduino, S.; Colombo, G.; Ocampo, O.M. and Panzeri, L. 2012.  
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A case study from rural Tanzania.  
Water Alternatives 5(2): 344-359



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## Contamination of Community Potable Water from Land Grabbing: A Case Study from Rural Tanzania

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**ABSTRACT:** This paper discusses a large-scale land deal which resulted in the contamination of water sources in the Iringa region of Tanzania, and the negotiation process which followed. An area of 1400 ha was rented to investors for agriculture and livestock-keeping. These activities caused contamination of the water sources which feed a water supply scheme managed by a downstream local community and serving a population of 45,000. While there are mechanisms within Tanzanian law to limit potentially polluting activities, establish protected zones around water sources and empower water user organisations to exercise control over activities that damage the quality of water, in practice, in the Iringa region, these were not effective as many procedures were not followed. This paper examines the cause of this, the effect that these failures had on downstream access to safe drinking water and the subsequent (largely successful) process of correcting the damage done.

The paper discusses the direct causes of water contamination (the use of fertilisers and pesticides and the presence of cattle) and the indirect causes (unclear administrative boundaries, lack of participation and transparency, procedures not followed and limited resources). The negotiation process and its outcomes are described. From this study we conclude that stakeholder communication and transparency are key elements in anticipating and preventing the arising of such situations. Often, these are in short supply when large land deals occur. In this case, ex-post solutions were arrived at. Finally, the paper looks at the broader dimensions of land deals that pollute the water feeding a water supply scheme. Such situations are a clear violation of the human right to safe drinking water – an issue that has not yet been sufficiently documented in the literature and which merits further attention.

**KEYWORDS:** Water contamination, water source protection, land deals, transparency, conflict resolution, Tanzania

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## INTRODUCTION

This paper is based on empirical evidence drawn from the authors' long-term involvement with a local community in the Iringa region of Tanzania that suffered from the effects of a large-scale land deal.<sup>1</sup>

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<sup>1</sup> The authors are all affiliated with ACRA, which is an Italian non-governmental organisation working in rural development. Where water and sanitation are concerned, it supports public and community systems, following the service delivery approach, and thus ensuring service sustainability through post-construction support to service providers. This includes strong and operational partnerships with grass-roots organizations, community-based service providers and line authorities;

The deal negatively affected the downstream water quality to such an extent that it can be considered an incident of 'water grabbing'. The water was contaminated as a result of a land deal made in the Makete district that affected the water quality of a water supply scheme which serves 45,000 people located in the adjacent Njombe rural district. The study describes the re-appropriation of water by the local community through a process that resulted in an agreement with the land investors and has already solved many of the problems that were originally created. In this sense the negotiation process can be seen as successful. Our analysis of the case draws particular attention to how land grabbing can have serious consequences on the human right to safe drinking water, a theme that has not yet been adequately developed in the literature.

In this paper we show that land deals can affect nearby (and sometimes faraway) water, even when these land deals do not explicitly involve any changes in water use for irrigation or extractive purposes. The land grabbing described in this article impaired the quality of the water and endangered the health of the downstream population. The deal lacked transparency and participation; the land was unexpectedly rented by the authority of the government of one district without any of the downstream district authorities, village councils and holders of water rights being informed, let alone consulted, beforehand. This was partly due to unclear administrative boundaries and weak local governance.

The case is described from the point of view of the affected local community, particularly the water user association (WUA), which holds water permits for two water sources and streams located on the land. The affected water supply is used for drinking and other personal use, all of which were impaired by contamination caused by farming activities on the land. Unlike other case studies, this article is not concerned with the effects that the land deal had on the quantity of available water for irrigation or other uses, or with other issues arising as a result of the land deal (e.g. customary land rights, food sovereignty and security, and farmers' rights).

We examine the reasons for the contamination of water. These include direct (farming and grazing) and indirect causes (contract issues, lack of stakeholder participation, missing inter-agency liaison and a lack of transparency in the overall process). These causes are discussed, together with the processes that were required to address the problems they gave rise to. One factor that emerges from this discussion is the importance of empowering communities and WUAs in order to effectively solve conflicts.

The case is a typical example of land grabbing, since it presents several characteristic features of this phenomenon: it involved almost 1400 ha and can therefore be considered a case of large-scale land grabbing, broadly defined as "acquisitions (whether purchases, leases or other) of land areas over 1000 ha" (Cotula et al., 2009). The new tenants are a foreign investor from Kenya and a former high-level Tanzanian official. The tenants are thought to be paying a low rent (though no details are officially available and no information on the land contract is publicly available). Neither the WUA (despite holding formal water rights over two springs located on the rented land) nor the District Authorities, the Basin Authority and the customary users (seasonal farmers, livestock keepers) were invited to participate in the negotiation process. Once the deal was signed, the area was patrolled by armed guards who did not allow the previous customary users to continue their activities. Finally, no consideration was given to the social or environmental implications of the land deal: though the new tenants claimed to have carried out an Environmental Impact Assessment, they never produced any evidence of this.

This land grabbing also involved water grabbing. Those who control the land generally also control water resources (see, for example, Cotula and Skinner, 2011; Höring, 2011). This occurred in this case, even though the new landholders did not withdraw water for irrigation or use it in ways that differed

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strengthening community management through capacity building and 'learning by doing'; capacity support to the authorities (decentralised government at both district and village level). Emphasis is also placed on learning, sharing experience and knowledge management, by cooperating with national civil society networks, building strategic partnerships with international leading organisations and participating in thematic debates.

from previous uses. The impact was not on water quantity but on *quality*, due to poor farming practices and a lack of consideration for downstream users. The contamination of the springs meant that the water supplying the downstream local community became unfit for human consumption, thus undermining the living conditions of 45,000 people. Water was not diverted from the users, but its *cleanliness*, the feature that made it appropriate for drinking and for other domestic uses, was impaired. The social and economic costs of this were externalised, to be borne by the communities and the WUA.

This case can be considered as a violation of human rights. The literature contains several references to land leases that cause food insecurity to local people or water shortages for small-scale local agriculture and how these represent a violation of the Right to Food (De Schutter,<sup>2</sup> 2009). It has also been demonstrated that "environmental pollution may constitute a violation of human rights as diverse as the right to private home, the right to dispose of natural resources, the right to food, and others" (Cotula, 2007).<sup>3</sup> But there is little in the literature about the human rights implications of land deals whose sole reported impact on water is the pollution of drinking water sources.

Safe drinking water has recently been recognised as a human right.<sup>4</sup> Consequently, the pollution of drinking water can be considered to be a violation of human rights.

## LAND GRABBING

In the aftermath of the global food and financial crisis of 2008, there has been a surge in sovereign states, international agro-businesses, investment banks, hedge funds, foundations and individuals buying or leasing land in developing countries for the production of food and bio-fuels, mostly for export (Vidal, 2010). The acquiring of tracts of land in developing countries by domestic or foreign investors, which became a very widespread practice in the first decade of this millennium, may have been originally welcomed by some host governments as an economic opportunity. Time, however, has shown that this phenomenon has many serious drawbacks, not least of which is the environmental damage that it can cause.

Land grabbing in Africa has attracted much attention in recent years. It is estimated that, up to 2010, approximately 50 million hectares of African land have been leased to foreign investors (UPI.com, 2010). Africa is a prime target because it has been widely portrayed as a continent with certain regions that have an abundance of underused land and natural resources, especially water, ideal for major agricultural development projects. Land deals have been made in many African countries, including Ethiopia, Mali, Nigeria, Sudan, Tanzania and Uganda, and many others (Vidal, 2010). In addition, it is important to note that investors also choose Africa because governments (at all levels) are often eager to lease large tracts of land to investors, sometimes for periods of time as long as 99 years, without giving much thought about the implications of long-term land use or the consequences for their own citizens (Woodhouse and Ganho, 2011).

Although advocated and strongly supported by some governments and private investors as a way to modernise the agricultural system and bring investments to the host country (Woodhouse and Ganho, 2011), land grabbing also brings an array of negative consequences. For example, it can raise food prices, making the poor and the hungry more vulnerable; it can exacerbate inequality and social instability; it can create conflict among different stakeholders (particularly different ethnic groups) over the control of dwindling natural resources; and it has been associated with illicit practices (Borras and

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<sup>2</sup> Mr. Olivier De Schutter, the United Nations Special Rapporteur on the Human Right to Food.

<sup>3</sup> See also the decisions "by the European Court of Human Rights in *Lopez Ostra v. Spain* and by the African Commission on Human and Peoples' Rights in *SERAC v. Nigeria* - which specifically concerns foreign investment projects in the natural resource sector in Africa" (Cotula, 2007).

<sup>4</sup> This was done under the Human Right to Safe Drinking Water and Sanitation, declared in 2010 by the General Assembly of the United Nations (A/RES/64/292). This states that "the right to safe and clean drinking water and sanitation is a human right that is essential for the full enjoyment of life and all human rights". The Human Rights Council (resolution A/HRC/RES/15/9) made the right to water and sanitation legally binding and has elevated this concept to an inalienable human right.

Franco, 2010). Last, but not least, it can have negative consequences for the environment, since the transfer of land de facto implies a change in control over water resources.

### **Land grabbing and the connection with water**

Although at first glance land grabbing would seem to be just about the control and the exploitation of land, it is also strongly linked with water. Since the land is normally leased for agricultural purposes, the investors are often granted exclusive rights to exploit water resources: not only 'green' water – rainfall and plant transpiration – but also 'blue' water – rivers, lakes and groundwater (Woodhouse and Ganho, 2011). This can greatly reduce the quantity of water available to local and downstream populations for drinking, domestic use, agriculture, grazing and other economic activities. Intensive agricultural practices, involving the use of fertilisers, pesticides and herbicides, can also pollute surface water and groundwater, making them unsafe for domestic use (von Braun and Meinzen-Dick, 2009).

Land grabbing is not only connected to water, but also to the lack of it: many of the countries involved in leasing land abroad are currently experiencing water shortages at home. For example, Saudi Arabia is investing heavily in African land. By producing food in Africa for its national market, it is also importing thousands of litres of 'virtual water', thereby endangering the livelihoods of African citizens, and causing serious harm to the local environment (Vidal, 2010). Land grabbing may also radically change the distribution of water as the result of the construction of dams and large-scale irrigation systems (Fisher, 2011).

## **CASE OVERVIEW**

### **Background**

The land grabbing affected a project that was started in 2006 by ACRA (Cooperazione Rurale in Africa e America Latina), an Italian NGO, which had constructed a gravity water supply system to provide safe drinking water to the population of the Njombe rural district.<sup>5</sup> The springs of Mnyolo and Tove, the sources of the water for this scheme, are located on a plateau in the adjacent Makete district, on a tract of land rented to private investors. These two springs are the starting point of the gravity water scheme, which consists of two intakes and two transmission pipelines. Altogether there are 94 km of laid pipes and 14 distribution lines that extend for 250 km, mainly in the Njombe rural district. The system currently supplies water to 15 villages in the area,<sup>6</sup> reaching almost 45,000 people within the Njombe rural district. The water discharge of the catchment is 84 litres per second (l/s);<sup>7</sup> and the water supply system is currently designed to supply 36 l/person/day. This implies that some 200,000 users in the Njombe (rural and urban) districts could eventually be provided with drinking water from these springs without significantly altering the overall availability of water in the basin. In addition, the waters of the Mnyolo and Tove springs flow into lake Nyasa,<sup>8</sup> a very significant water reservoir, in a densely inhabited

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<sup>5</sup> Over the years, the project has been financed by the European Union and the Italian Ministry of Foreign Affairs. It also comprises activities directed to the strengthening of the WUA, the conservation and safeguarding of the local environment, such as the rehabilitation and conservation of traditional water sources, reforestation of the intake area, establishment of tree nurseries for the production of water-conservative species destined to reforestation, and training programmes for the local population on basic environmental sustainability practices. ACRA also supported the Ministry of Water in the implementation of the water point mapping baseline for the entire Iringa region, and piloted – in cooperation with UN-Habitat – a low-cost kit for testing water quality at the regional level (this experience was presented at the 2011 World Water Week in Stockholm).

<sup>6</sup> The gravity water system supplies water to the villages of Usalule, Igagala, Ulembwe, Wikichi, Itulike, Nyumbanitu, Mlevela, Igima, Mhaji, Lusisi, Lulanzi, Ituduma, Mtwango, Mungate and Tove.

<sup>7</sup> Source: ACRA.

<sup>8</sup> The livelihood of the local population largely depends on the lake's resources: water, fish, energy and transportation. Around 80% of the people living in the lake's catchment area practice subsistence farming and are highly dependent on the lake's water resources. The amount of land available per household has been progressively decreasing, primarily because of population growth. Consequently, people living in the region are being forced to cultivate marginal areas, such as wetlands



When the scheme was established (and in full compliance with Tanzanian legislation), two new entities were created to manage the water supply system: a water user association (WUA), in charge of the operation and cost recovery of the water system, and Water Committees for each village, charged with the task of maintaining the water supply system and contributing to the integrated and sustainable management of the Nyasa basin's water resources in collaboration with the district's Water Engineer.

Before this land deal, the land had been abandoned for over 10 years (following a previous land rental). During the 'abandonment' period, the land was partially used by the people of the Mwilamba village (Njombe rural district) and Ibumila village (Makete district), for livestock-keeping and some seasonal farming during the rainy season. However, since the new land deal, these activities are no longer tolerated and the villagers have completely abandoned the area, discouraged by the armed guards constantly patrolling the land boundaries.

### **Jurisdiction**

Water flowing from the springs of Mnyolo and Tove ultimately flows to lake Nyasa. In Tanzania, Water Basin Authorities, in this case the Lake Nyasa Basin Authority, have full jurisdiction over all the water resources within each basin. The WUA of Tove-Mtwango is the owner of the water infrastructure and is responsible for collecting the water fees and paying the Nyasa Basin Authority for water rights. The Tove-Mtwango Water Supply Association holds two water permits granted by the Lake Nyasa Basin Water Board, one for each stream (Mnyolo and Tove).

There is some uncertainty as to the exact location of the boundary between the Makete district and the Njombe rural district. Almost all parties seem to agree that the land rented to the private investors lies in the Makete district, but no official document exists to confirm this<sup>9</sup> – at least none has so far been made available to those involved in the case. In any case, the land in question is owned by the Tanzanian government.

### **The land deal**

In April 2009, when construction of the water supply system was well under way,<sup>10</sup> ACRA's staff discovered that a tract of land, which includes the spring of Mnyolo and is close to the spring of Tove, had been rented to investors for the intensive cultivation of crops and for animal grazing (figure 2). These farming practices subsequently degraded the quality of water of the springs and also contaminated their intakes, which are located outside of the farm's boundaries. The discovery was made accidentally during a field survey upstream of the Mnyolo intake. The land had probably been rented since 2008, even though there has been no official confirmation of this.

The land in question, owned by the Tanzanian government, was rented to a local industrial farm, whose main investors are a Tanzanian national (who served as a high-level official at the Tanzanian Ministry of Water), and a citizen of Kenya. The annual rent has been said to be a mere 8 million Tanzanian shillings (approximately US\$5000).<sup>11</sup>

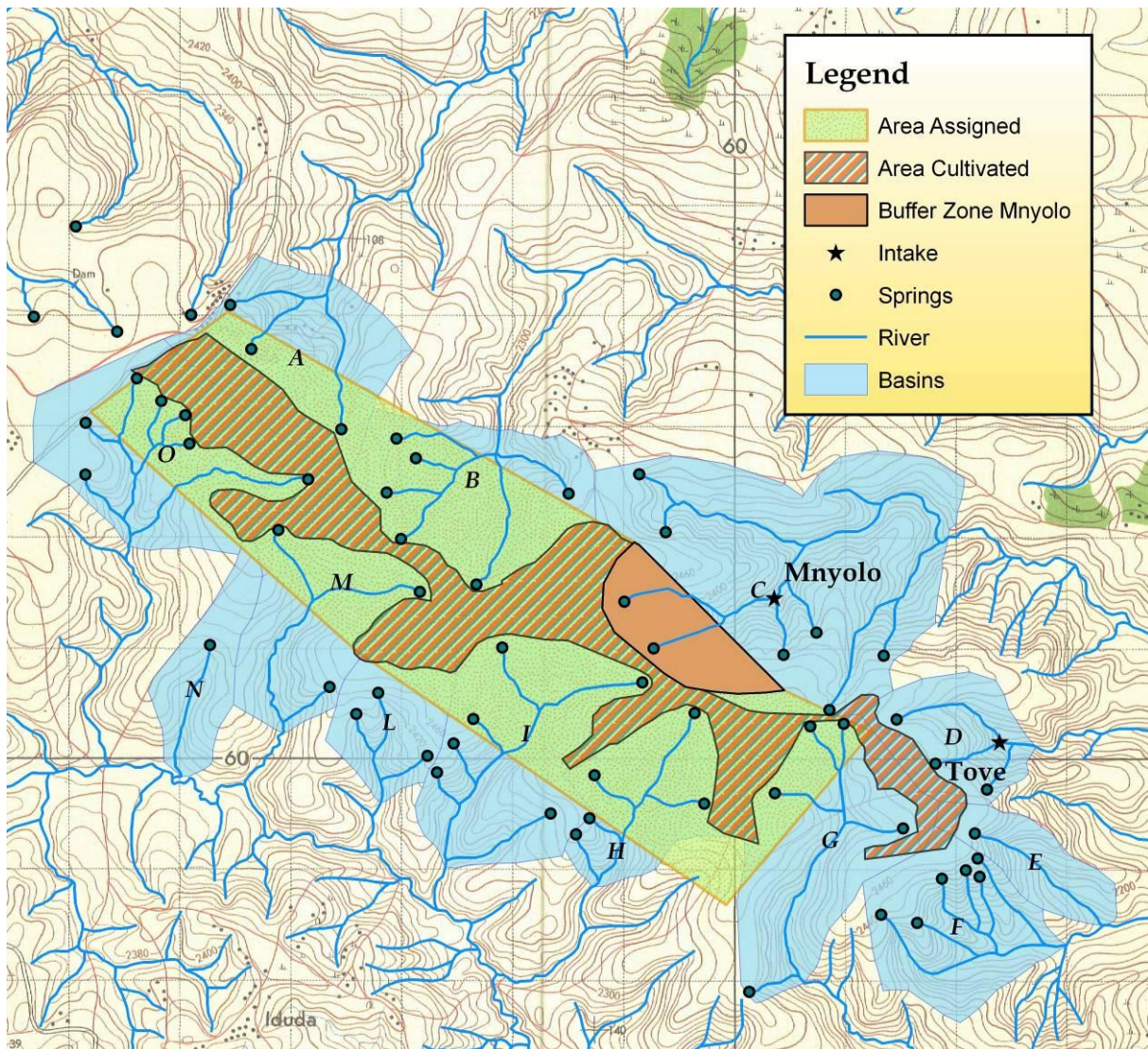
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<sup>9</sup> This information was volunteered by the Njombe rural district Land Officer, who also personally inspected the land in November 2010.

<sup>10</sup> The completed water scheme was inaugurated by His Excellency the President of the United Republic of Tanzania, Dr. Jakaya Mrisho Kikwete, on November 13, 2011.

<sup>11</sup> Personal verbal communication to ACRA by one of the investors. ACRA has been unable to verify this since the contract has never been produced and no official information has been made available on this topic.

Figure 2. Overview of the land use in 2011 (after the negotiations).



Note: Map elaborated by ACRA's staff in Tanzania. The buffer zone is the result of the conflict resolution process. Letters indicate water basins that are fed from the plateau. The leased land (green on the map) was plotted from a sketch provided to ACRA by the investors. The cultivated area (striped on the map) was mapped by ACRA staff in the summer of 2010 during a site visit. The buffer zone (orange on the map) was mapped at the beginning of 2011 by ACRA staff (using GPS), after an agreement on the buffer zone was reached with investors and basin authorities in January 2011 and this zone was demarcated with poles.

Despite efforts to obtain official information, the only details made available on the deal were provided to the Nyasa Basin Officer by the investors themselves. According to their maps, the total land rented consists of almost 1400 ha, a figure that also includes inclines and slopes not suitable for farming. Mapping of the area by ACRA's staff in 2010 indicated that approximately 550 ha of the area were actually used for farming.<sup>12</sup> The cultivated area included the spring of Mnyolo and was close to the spring of Tove. The farm did not cause any deforestation or major direct alteration of the water regime. However, grazing restricted vegetation growth, initiated erosion on the steeper inclines, and caused

<sup>12</sup> Currently, the amount of land being farmed is less than 550 ha, as a result of the conflict resolution process and the agreement to create a buffer zone encircling the spring of Mnyolo, where cultivation is not permitted.

contamination of the water supplies, while ploughing near the springs (5-10 m away) interfered with the hydrology of the springs. The farm does not use water for irrigation and has not, so far, requested a water permit from the Nyasa Basin Authority.

The farm grows two types of cereals, barley (*Hordeum vulgare*) and millet (*Panicum miliaceum*), mostly for the production of beer as well as distilled beverages. The cereals are sold to a majority state-owned firm, which brews beer and distils beverages for the local Tanzanian market. The farm also breeds approximately 100 head of cattle for the sale of meat at the national level.

### **Lack of transparency: Issues with the rental of the land and the contract**

Because the contract of the land deal has never been made available to the public, nobody knows whether the contract contains clauses regulating the use of water and water sources. The period of the land deal is also unknown: based on the duration of other deals in the region, ACRA's local staff suspect that the land has been rented for up to 25 years, although 50 years is not unlikely; however there is no certainty about this.

The plans to build the water supply system had been discussed with the Njombe Rural District Council, based on the assumption that the land in question was under its jurisdiction. It was never suggested that the Makete district would be involved. During the design and the construction of the water infrastructure, government officials, both from the central government and from the district, did not mention the possibility that the land around the springs could be leased for commercial purposes. The Rural District of Njombe, where the water scheme is located, had not been informed about the land transaction. Also the district where the springs were located (Makete) never made a move to protect them – as required by Tanzanian legislation. The investors claim that they undertook an Environmental Impact Assessment, but have not produced any official document to demonstrate this. It is also important to add that, during the feasibility study for the construction of the water scheme, ACRA failed to do a risk evaluation analysis.

The renting of the land without informing and consulting with the affected communities, their organisations and the authorities – and thus without considering their needs, rights and duties – meant that the relevant authorities also had no opportunity to assess the environmental risks and take appropriate measures. They were not able to check the type of chemicals to be used, or the farming practices that would be carried out. Such checks would have allowed them to address the threats from this new land use and their effects on the supply of drinking water. This lack of communication and consultation among stakeholders, and the omitted procedural steps, seem to be the direct consequence of unclear jurisdiction and a lack of formal procedures both at the district and at the project level.

In 2009, the Government of Tanzania embarked on an initiative to transform its agriculture into a modern commercial sector. The initiative is called *Kilimo Kwanza* (Agriculture First). The *Kilimo Kwanza* resolution and action plan clearly indicate the intention of boosting domestic and foreign private investments in the agricultural sector and to enhance the relations and interactions between the government and the private sector. However, this research shows that, without adequate consultation with communities and proper coordination among the stakeholders, the push for commercial farming can affect the livelihoods and well-being of rural populations, particularly their access to vital resources like water.<sup>13</sup>

Lack of transparency and integrity in land deals is of particular concern since Tanzania has passed legislation aimed at protecting its water resources. The Water Resources Management Act of 2009<sup>14</sup>

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<sup>13</sup> Tanzania National Business Council. 2009. *Kilimo Kwanza Resolution*. [www.tnbctz.com/index.php/KILIMO-KWANZA/View-category.html](http://www.tnbctz.com/index.php/KILIMO-KWANZA/View-category.html) (accessed 6 April 2012)

<sup>14</sup> Ministry of Water of the United Republic of Tanzania. 2009. *The Water Resources Management Act, 2009*. Dar es Salaam, Tanzania: Government Printer.



clearly establishes protected zones around water sources. Article 2.7 mandates the duty for anyone residing in mainland Tanzania to safeguard water resources and to inform the authorities of any activity that could compromise their quantity or quality. Article 2.9 states that any proposed development project in a water resource area must provide an Environmental Impact Assessment study. More specifically, article 6.34 prohibits human activities within 60 m of a water dam, reservoir or water source. Furthermore, the Water Supply and Sanitation Act of 2009<sup>15</sup> empowers WUAs to exercise control over any actions that may cause pollution and mandates district councils to promote efficient water use, control pollution and take measures to conserve and protect waterworks, streams, rivers, springs and other water sources located within their boundaries.

Such progressive legislation shows that the Government of Tanzania is aware of the importance of protecting its water resources and has taken concrete steps to ensure an appropriate legislative framework. However, our case study shows how much has still to be done to ensure the actual enforcement of these laws: the authorities of the Makete district did not ensure the protection of water sources at the outset. The authorities of the Njombe rural district were not informed about the land being rented or the type of crops being grown, the fertilisers and pesticides used, or about grazing close to the water sources. Moreover, no tests for water contamination were carried out by the competent authorities, a serious failure considering how much the degradation of water can affect the livelihoods and health of the population.

The decentralisation policy enacted by the Tanzanian Government may explain some of the inefficiencies and gaps in the system, as the transfer of responsibilities has not been accompanied by an adequate shift of resources. The Nyasa Basin Authority, for example, oversees a very large area with limited staff; local revenue collection is low; financial resources from the central Government arrive with several months delay and are often only a fraction of the amount requested.

## THE DEGRADATION OF THE QUALITY OF POTABLE WATER

### The degradation of potable water due to intensive agriculture

The land is intensively cultivated with barley and millet. Before the negotiation process started, the springs were inadequately safe-guarded, since both cereals were grown within proximity of the water sources. Intensive crops such as these require the use of herbicides and also of fertilisers, some of which contain nitrates.<sup>16</sup> Studies conducted on the crops indicate that the main components of the products employed for fertilising were nitrogen, potassium and phosphorus.<sup>17</sup> The products used may have been TPS (trisodium phosphate), which contains phosphorus, and CAN (calcium ammonium nitrate), which consists of a mix of nitrogen, limestone and urea. Both products are available and legal in Tanzania.<sup>18</sup>

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[www.maji.go.tz/modules/documents/index.php?&direction=0&order=&directory=Water%20Legislation](http://www.maji.go.tz/modules/documents/index.php?&direction=0&order=&directory=Water%20Legislation) (accessed 29 November 2011)

<sup>15</sup> Ministry of Water of the United Republic of Tanzania. 2009. The Water Supply and Sanitation Act. Dar es Salaam, Tanzania: Government Printer.

[www.maji.go.tz/modules/documents/index.php?&direction=0&order=&directory=The%20Water%20Supply%20and%20Sanitation%20Act](http://www.maji.go.tz/modules/documents/index.php?&direction=0&order=&directory=The%20Water%20Supply%20and%20Sanitation%20Act) (accessed 29 November 2011)

<sup>16</sup> Nitrates are important in intensive agriculture because they increase the protein level of crops. Although barley and millet do not require large amounts of nitrogenous fertilisers, there is nevertheless a high risk of water contamination, depending on the fertilising techniques adopted. For example, there is a higher risk of contaminating water if the nitrogenous fertiliser is applied all at once, rather than being applied in smaller quantities over a longer period of time.

<sup>17</sup> This information was confirmed by the farm's manager.

<sup>18</sup> It is difficult to get exact information on the products used because the investors are reticent to provide information, even when requested to do so by the authorities.

A product that was certainly used, by the admission of the investors, was ARTEA 330 EC,<sup>19</sup> a particularly harmful fungicide which is not officially registered for use by the Tanzanian government.<sup>20</sup> The use of this was, at the very least, questionable, if not explicitly illegal. A test conducted in December 2010, approximately 2 years after the farming began, did not detect any traces of ARTEA in the water. This, however, does not exclude the possibility that ARTEA has infiltrated the groundwater and will surface in the future. It is important to monitor the situation as probably all the cultivated area (circa 550 ha) was treated with ARTEA and because the soil has a low permeability.

For two reasons it is unfortunately not possible to precisely establish the type and amount of chemicals that may have infiltrated the water. The first is that chemicals that seep into the ground are first captured by the roots of plants and therefore it takes a certain amount of time before the polluting agents actually get into the water and can be clearly detected. Secondly, there is a lack of equipped scientific laboratories in the Iringa region, a factor that makes running tests on every kind of polluting agent impossible. Therefore it is impossible to exclude the possibility that chemicals have infiltrated the groundwater and since the more toxic agents can linger in it for very long periods of time, this may possibly compromise the safety of these water resources for many years.

### **The degradation of potable water due to livestock farming**

The farm also breeds cattle for meat production. When the land transaction was first discovered, there were approximately one hundred head of cattle on it, able to graze freely in the areas adjacent to the springs. Laboratory tests were carried out in 2009 by the Njombe and the Nyasa basin laboratories using a specific methodology, called MPN (Most Probable Number), to detect *E.coli*. Water samples were taken from the water sources, the intakes and randomly selected public distribution points and storage tanks. As expected, these analyses confirmed that the water carried in the supply system was not safe for drinking.

The results of the bacteriological analyses from the Mnyolo and Tove springs showed that the water intakes were contaminated by a harmful strain of *E.coli*, with the water containing levels between 6 and 21 units of *E.coli*/100 ml. In 2010, a test showed that the situation had deteriorated, with *E.coli* then in the range of 12 to 43 units/100 ml (Panzeri, 2010). This significant rise was probably caused by rainfall, which, by increasing the flow of surface water, facilitated the contamination of the springs and of the water downstream of the farm. The increase could also have been caused by cattle defecating directly into the surface water. In both cases the laboratory tests showed that the water was not suitable for human consumption and for other domestic uses without proper prior treatment.

### **NEGOTIATION AND CONFLICT RESOLUTION: A POSITIVE EXAMPLE**

The construction of the water supply system started in 2006. The cultivated land near the water system's intake was first noticed by ACRA's project manager in April 2009 and first officially reported to the authorities in July that year. Before then, no one had reported to the authorities any illegal or controversial activity. The time line of the negotiation and conflict resolution is described in Box 1 (below).

The first phase of the mediation process, which began in May 2010 after preliminary inspections and reached a positive conclusion in January 2011, involved the following actors: the investors, the Nyasa Basin Authority, the Njombe rural district Water Engineer (responsible for the district's water supply),

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<sup>19</sup> A full description of ARTEA 330 EC can be found on the site of Syngenta, the company that produces it. [www.syngenta.co.za/attachment\\_view.php?pa\\_id=128](http://www.syngenta.co.za/attachment_view.php?pa_id=128) (accessed 9 November 2011)

<sup>20</sup> The complete list of chemical products officially registered in Tanzania can be found at the website of the Tropical Pesticides Research Institute, 2008. List of pesticides registered in Tanzania. [www.kilimo.go.tz/publications/english%20docs/list%20of%20pesticides%20registered%20in%20Tanzania%20by%20Nov%20007.htm](http://www.kilimo.go.tz/publications/english%20docs/list%20of%20pesticides%20registered%20in%20Tanzania%20by%20Nov%20007.htm) (accessed 16 October 2011)

the Regional Water Advisor (a water expert, responsible for helping the District's Water Department in its activities and in the implementation of water projects), the Njombe Rural District Council (whose members are elected, making it de facto the most political of all the administrative bodies involved), the Water Users Entity of Tove-Mtwango (a consortium of all the villages that manages the aqueduct), the Makete District Water Engineer, Njombe's Land Office and ACRA's personnel.

Although the land deal was first discovered by ACRA, all the following phases of the negotiation process were led by the WUA, the holder of the collective water rights. ACRA's role was to support the work of the WUA, while the Nyasa Basin Authority served as a mediator between the WUA and the investors (as a water right holder, the WUA may ask for the Basin Authority's intervention at any moment). Possibly the most positive outcome of these negotiations was the strengthening of the WUA, which acquired knowledge, authority and a deeper sense of its water rights and the need to claim them. For example, the WUA took the initiative to write an official letter to a local Member of Parliament, who was also the Deputy Minister of Water, whom they then met in June of 2011. This demonstrates that the challenge led the WUA to be more aware of its rights, to acquire a stronger capacity for dealing with authorities and to become more familiar with processes and procedures. These new skills are expected to make the WUA more aware of malpractice, lack of transparency, uncertainty and risk, and this means that the WUA will be better equipped to resolve such problems in the future when dealing with private and public entities.

Simple mediation techniques were instrumental in convincing the investors of the importance of protecting the water sources from polluting agents. For example, the investors were shown the results of the water analyses, which clearly demonstrated that from 2006 to 2010 there had been a rapid deterioration of the springs' water quality due to bacterial contamination, and that an improvement had taken place after the buffer zone was implemented. The intervention of the Nyasa Basin Officer was strategically important in ensuring that the conflict was positively resolved.

Since December 2010 no instances of animal grazing have been detected in the proximity of the springs of Mnyolo and Tove. Furthermore, the area assigned to the cultivation of barley and millet has been reduced in order to fully respect the 100 m buffer zone, a sign that the farm's management has started to comply with the Nyasa Basin Authority's decisions. Since then, the quality of the springs' water has normalised. The farm's management not only fully cooperated with the WUA but also took it upon itself during 2011 to plant around 1000 water-retaining trees near the spring of Tove.

The WUA is currently monitoring the situation by doing water analyses every 3 months and by visiting the intakes and the water sources on a monthly basis. ACRA is also visiting the farm at least once a month. Based on preliminary information it can be concluded that, up to November 2011, the farm's management has fully honoured the agreements that they made.

However, in order to consider this case successfully resolved, there is still a need for the various parties to sign a written agreement and ensure the future protection of the water resources on the farm. Consequently, ACRA is strongly advocating that this last, but very important step, be concluded as soon as possible.

Box 1. The time line of the negotiation process.

*April 2009:* the cultivated land adjacent to the spring was first discovered by ACRA during an occasional field visit of the water intakes and springs.

*July 2009:* first official inspection by the WUA, the Njombe rural district Water Engineer and ACRA.

*August 2009:* subsequent inspection with the Regional Water Advisor of the Iringa region, who later informed the National Environmental Management Council (NEMC) of how the situation was affecting the springs' water. During this visit, the farm's security staff asked the visitors to leave the premises, indicating unwillingness on the part of the investors to face the gravity of the situation or to cooperate with the designated authorities.

*October 2009:* a committee of representatives from the Njombe Rural District Council inspected the area. The Njombe rural district Water Engineer subsequently sent an official notice to the Nyasa Basin Officer reporting the critical situation that had arisen in proximity of the springs of Mnyolo and Tove. The WUA requested the intervention of the District and Basin authorities.

*12 May 2010:* the Nyasa Basin Officer, representing the most influential water authority in the area, first visited the farm.<sup>21</sup>

*8 June 2010:* a preliminary meeting was organised by the Nyasa Basin Office with one of the farm's investors, a representative of the Water Users Entity of Tove-Mtwango, ACRA's staff and delegates from the Njombe rural district. The investor showed a cadastral map of the Makete Land Register, given to them by the District of Makete, and confirmed that the land had been officially rented to them by the Government, with the consent of the District of Makete.<sup>22</sup> The Njombe rural district, which borders the District of Makete, had not been consulted because the land was thought to be in Makete and not in Njombe. This raised questions about which district has jurisdiction over the springs of Mnyolo and Tove (see below for information regarding the visit during November 2010). The Nyasa Basin Office stated that water source protection is under its jurisdiction and that it should have been consulted beforehand.

*25 August 2010:* the parties met at the spring of Mnyolo, located within the farm's boundaries. The Nyasa Basin Office pointed out – and everyone agreed – that the investors had not adequately protected the springs and had committed some crucial errors, mainly by letting animals graze in a zone adjacent to the springs, the absence of a buffer zone between the crops and the springs and the inappropriate use of harmful pesticides and toxic products (such as the fungicide ARTEA 330 EC). The investors stated that they had undertaken an Environmental Impact Assessment, but this was not produced even after repeated requests. Nonetheless, at the end of the meeting, the investors accepted that cattle should be restricted from grazing in the catchment area of the water sources and agreed to the Nyasa Basin Authorities demarcating a buffer zone between the springs and the cultivated area.

*November 2010 (beginning):* the farm was inspected by the Land Officer of the Njombe rural district in order to determine which district the farm is located in. The Officer stated that there is no clear boundary between the two districts, so it is still unclear under which district's jurisdiction the land is.

*24 November 2010:*<sup>23</sup> a team sent by the Nyasa Basin Authority started a preliminary demarcation of the buffer zone, up to 300 m from the springs. The investors refused to accept the buffer zone that the Nyasa Basin Authority wanted to implement. An informal agreement was reached only after intense (telephone) negotiations between the Nyasa Basin Authority, the investors, the WUA and ACRA. Water samples were taken from the springs to be analysed in a laboratory located in Songea. Tests showed that the water was contaminated with *E.coli* (approximately 34 units/100 ml).

*January 2011:* the parties agreed to:

- ♦ establish a buffer zone of 100 m around the cultivated area. This is in line with Tanzanian law, which stipulates a minimum distance of 60 m;<sup>24</sup>
- ♦ forbid cattle grazing and the use of harmful chemicals within the entire catchment area of the springs (figure 2).

<sup>21</sup> This visit was delayed due to a change in personnel.

<sup>22</sup> No official document is available to explain whether the land was rented to the investors by the central government of Tanzania or by the local district.

<sup>23</sup> This visit was delayed because the Nyasa Basin is very large and the Authority is currently understaffed.

<sup>24</sup> Tanzanian law stipulates that a buffer zone of at least 60 m must separate a cultivated area from a source of water. This, however, is only a minimum requirement: if the parties involved are in agreement, this distance can be increased to more than 60 m and the Basin Authorities have the power to impose an even larger buffer zone. Even though infiltration of pollutants may theoretically reach distances much in excess of 100 m, this buffer is considered sufficient to protect water quality in the study area.

♦ grant ACRA and the WUA permission to plant trees in the springs' watersheds, and access at any time for reforestation and monitoring activities, subject to prior agreement with the management of the farm.

April 2011: experts from the European Court of Auditors visited the water supply scheme (which is funded by the European Union) and insisted with the relevant authorities that a formal agreement be signed.

June 2011: the WUA met with a local Member of Parliament and Deputy Minister of Water to discuss the need for a formal signed agreement among the parties. The meeting was requested by the WUA.

13 November 2011: the lack of a signed agreement was pointed out again by the WUA and ACRA to His Excellency the President of Tanzania at the official inauguration of the aqueduct of Tove-Mtwango. The President himself promised to help accelerate the signing of an agreement.

### SUMMARY AND CONCLUSIONS

The land deal described in this paper resulted in the contamination of water resources which seriously affected the quality of water for human consumption provided to the local population. This consequence of land grabbing has not been widely explored in the literature to date, which has mostly focused on the impact of land grabbing on peoples' livelihoods and their food security (whether through the direct loss of land or the diversion/abstraction of water resources to which they previously had access). As such, it opens up a new aspect in the land grabbing debate – in that it represents a violation of the human right to safe drinking water.

In 2010, the General Assembly of the United Nations declared that "the right to safe and clean drinking water and sanitation is a human right that is essential for the full enjoyment of life and all human rights" (A/RES/64/292). That same year, the Human Rights Council has also made the right to water and sanitation legally binding and has elevated this concept to an inalienable human right (Resolution A/HRC/RES/15/9).

Olivier De Schutter, the UN Special Rapporteur on the Human Right to Food, warns that "agreements to lease or cede large areas of land in no circumstance should be allowed to trump the human rights obligations of the States concerned" (De Schutter, 2009),<sup>25</sup> and stresses the responsibility of both the investors and the authorities in respecting human rights.

The situation in Tanzania is somewhat complicated as the country has not (yet) enshrined the right to safe water and hygiene within its legal framework (WASH United, Freshwater Action Network and WaterLex, 2012). Nonetheless, as a result of an instance of land grabbing the drinking water supply of some 45,000 people in the Njombe rural district was rendered unfit for human consumption. The initial cause (now resolved) of this was that cattle were allowed to freely graze in and around the sources of the two springs being used for water supply. Their presence raised *E.coli* levels and rendered the water unfit for human consumption if not treated beforehand. A second (potential) problem may have arisen from the seepage of fertilisers and an unauthorised fungicide into the water supply. These problems have occurred in a region that is rich in water resources and with a substantial downstream population living around lake Nyasa and reliant on this water supply for its livelihood.

The emergence of these issues highlights some of the problems countries subject to land grabbing have to face. While they may have legislation in place to protect the environment and people, in practice these laws are often poorly enforced. This is particularly true in sub-Saharan Africa where it is often very difficult to ensure transparency and integrity (Plummer, 2008). While this is difficult, it is of vital importance in the water sector. A number of factors contributed to a lack of transparency over this land deal and to the pollution of people's drinking water supplies. The first of these was uncertainty

<sup>25</sup> The Special Rapporteur on the Human Right to Safe Drinking Water and Sanitation, Ms. Catarina de Albuquerque, has not yet made any statements on land deals.

about the location of the districts' boundaries and administrative responsibilities. Secondly, the district authority which permitted the land deal failed to consult with or inform the downstream district authority, or the River Basin Authority (responsible for water within the river basin). The farming practices were implemented without the knowledge of the downstream users or the relevant authorities. Thirdly, the initial negotiations were hindered by the lack of documentation (or unwillingness of the signees to disclose the documentation) regarding the land deal contract, the conditions and rights contained within it and the Environmental Impact Assessment that the new tenants claimed to have carried out. These problems were further confounded by a lack of prior basin-wide planning or enforcement of existing regulations regarding changes in land use, which would have ultimately protected the springs.

Other studies on land grabbing have highlighted the poor quality (or non-existence) of formal contracts, which makes it possible for new tenants to externalise costs on their neighbours and the natural environment (Cotula, 2011). This seems to have occurred in this case, despite the safe-guards that exist within Tanzanian law. In this respect, De Shutter recommends that "the obligations of the investor be defined in clear terms" and that these be enforceable for example through a clear sanctioning mechanism related to "clear and verifiable commitments" that go beyond the payment of rents or monetary sums (in the case of land sales).

Such obligations can only be effectively enforced if there is an adequate system of checks and balances in place. These should include a clear recognition of jurisdictions and obligations to disclose details to third-party stakeholders when making a land deal. In the case of Tanzania this implies a full implementation of the 2006 Water Sector Development Strategy and the 2009 Water Resources Management Act. There is a clear need for these sectoral plans to be better integrated within the planning system, which should be participatory and adopt a broad basin-wide approach, as also outlined by de Albuquerque<sup>26</sup> (2011).

In addition to strengthening and democratising the planning system, clear guidelines about the threshold at which an Environmental Impact Assessment needs to be carried out should be provided – together with guidance as to which topics it should address. Furthermore, increased technical capacity is needed to provide clear scientific data. In this case, the results of the water samples appeared to be critical in swaying the argument.

A curious feature of this case is that, despite many shortcomings within the administrative sectors, the most important problems were resolved through negotiation. Yet there is still no formal legally binding contract specifying the rights and responsibilities of the new tenants with regard to maintaining the quality of the water supply and other aspects of the lease. This is despite repeated requests from the WUA to their local MP, also the Deputy Minister for Water, and even to the President of the Republic of Tanzania.

The most pressing problems that this instance of land grabbing gave rise to appear to have been resolved. This was largely due to the vigilance and persistence of civil society organisations (particularly the WUA) and the responsiveness – albeit somewhat delayed – of local and regional authorities, particularly the River Basin Authority. One of the benefits of this case is that it has helped the WUA to be more aware of regulations and procedures and substantially develop its capacity and confidence when dealing with the relevant authorities: this experience has led the WUA to build stronger networks with all the agencies involved. Stronger resource user groups and holders of collective rights are essential if resource rights and human rights are to be acknowledged.

However, not everything went smoothly. There was a long time lag between the WUA requesting the intervention of the Basin Authority and the latter sending an officer to visit the site – due to changes in the personnel – and logistical difficulties in arranging for water testing – due to a shortage of

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<sup>26</sup> de Albuquerque, C. 2011. *Special Rapporteur on the human right to safe drinking water and sanitation*. Statement to the Human Rights Council, 18th session. 15 September 2011.

[www.ohchr.org/Documents/Issues/Water/Statement%20final%2013092011.pdf](http://www.ohchr.org/Documents/Issues/Water/Statement%20final%2013092011.pdf) (accessed 4 April 2012)

laboratory facilities in the region. Lack of laboratories is obviously an obstacle when trying to regularly monitor water quality. In addition ACRA, the Italian NGO which implemented the water supply project, could, in hindsight, be considered at fault for not having conducted an adequate environmental risk analysis prior to the construction of the water supply scheme, either relating to land ownership or to the hydro-geological features of the catchment, that could have identified potential risks or threats.

The situation that arose in this case could have been avoided if the transaction had been carried out in a more transparent manner and if the local population and relevant local authorities had been informed about, and consulted over, the land transfer. This case shows that at the national level there is still a large gap between the intent of legislation to protect water resources and local communities' interests, and its implementation. This gap could be closed (at least somewhat) by establishing – and then thoroughly following – a set of guidelines for responsible land transactions that tackle the issues of integrity, transparency and participation. Existing land and water rights should be properly recognised within this process.

### ACKNOWLEDGEMENTS

Many thanks to Beatrice Coloru (field officer, ACRA Tanzania) for creating the initial basis for this paper by studying the case and writing the preliminary abstract; Marco Iob (CeVI, Water Campaign Manager), Carlo Simonetti (ACRA Senegal, Programme manager WASH), and Cristina Sossan (Italian Committee for the World Water Contract) for their helpful input during the drafting of this paper; Nicola Morganti (founding member of ACRA and of African Ways Ltd in Tanzania) for the information on land leases legislation in Tanzania; and Nicholas Parrott (TextualHealing.nl) for his valuable help editing the English language content of the paper. Any inconsistency in the paper is the responsibility of the authors only.

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