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Discussion Paper 12

**BARABAIG NATURAL RESOURCE MANAGEMENT:
SUSTAINABLE LAND USE
UNDER THREAT OF DESTRUCTION**

by
Charles Lane

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**United Nations Research Institute
for Social Development
Palais des Nations
1211 Geneva 10
Switzerland**

**Tel. (022) 798.84.00/798.98.50
Fax (022) 740.07.91
Telex 28 96 96**

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The following paper reports on the traditional land management practices of the Barabaig, a semi-nomadic pastoralist group in Tanzania, and on the impact that a large-scale agricultural development project has had on their livelihood and on the environment. The paper was prepared as part of the UNRISD programme on **Sustainable Development through People's Participation in Resource Management**, which seeks to explore the dynamics of local level initiatives concerned with environmental degradation, to examine and analyse traditionally sustainable resource management practices and to investigate the factors which facilitate or constrain community participation in externally initiated resource management projects and programmes. The project is being co-ordinated within UNRISD by Jessica Vivian.

The author of this paper has spent 10 years as a development worker in Tanzania, and is presently a Research Associate with the International Institute for Environment and Development (IIED). The paper shows evidence of his thorough knowledge of the Barabaig culture and resource management practices, as well as of the ecological system in which this group lives. The Barabaig practice a complex and highly developed system of resource management suitable for the semi-arid conditions of the Hanang plains. Through intimate knowledge of their environment, and through intricate mechanisms governing the use of grazing lands, which are held as common property by the community, the Barabaig have historically maintained the productivity of their lands.

In the early 1970s, as part of an effort to increase wheat production in Tanzania, a large-scale wheat scheme was introduced in the area. The wheat farms, which involve mono-cropping with hybrid varieties and capital-intensive farming techniques, have meant the loss to the Barabaig of the majority of a particular type of grazing land which had played a key role in their traditional seasonal grazing rotation. Because the Barabaig, in order to preserve the fertility of this land, did not utilize it year-round, it was considered "idle" by the project developers, who believed that wheat farming would put the land to more efficient use.

The analysis in this paper calls into question two widely held assumptions regarding pastoralism in Africa. The first concerns the belief in the "tragedy of the commons", a theoretical model which maintains that lands held in common among a community, rather than privately owned, are subject to degradation because it is in each individual's interest to overexploit the land. In fact, the Barabaig case shows that where a community has developed a knowledge of the capacity of its environment, it is possible that rules which will ensure that common property is managed sustainably can be developed and enforced.

A second widely held assumption about pastoralism is that it is a relatively inefficient use of land, especially when compared with mechanized agriculture. The author argues in this paper, however, that, at least

in the Barabaig case, the use to which these pastoralists traditionally put their land is preferable, in social, environmental and economic terms, to the agricultural project which has supplanted them. The project has displaced the Barabaig and made their traditional way of life untenable. It has caused soil erosion and has eliminated from the area the types of local grasses most productive for grazing purposes. Lastly, the costs of the scheme include imported inputs which require the expenditure of foreign exchange and which are considerably subsidized by foreign aid. These costs, when the opportunity costs of the expenditure of foreign aid are taken into consideration, considerably outweigh the benefits of the scheme.

Ongoing UNRISD work on the theme of sustainable development and people's participation will investigate further some of the issues raised by this paper. As one of the programme's areas of focus, other examples of traditional resource management systems, and the constraints and pressures which these systems are now facing, will be examined, and particular emphasis will be placed on the implications of these studies for national and international development policy.

June 1990

Dharam Ghai
Director

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The failings of the "green revolution" have shattered faith in the power of technology alone to solve development problems. Development has come to mean more than simply increasing production. Wider considerations of social equity and environmental conservation have proved to be equally important. Economists are also now realizing that the pursuit of economic growth has an environmental down side that must be given a cost in future budgeting (Pearce et al., 1989). Conservationists from all over the world are involving themselves in the struggle to win the battle to protect Africa's natural resources (Harrison, 1987). Social scientists are also now revealing the value and importance of traditional land use systems for the preservation of people's livelihoods and the conservation of nature. Sustainable development has become a new and important goal for developers (Conway and Barbier, 1988).

In recent years more attention has been given to pastoralists' traditional resource management systems, particularly those with common land tenure arrangements (see Baxter, 1989; Raintree, 1987; National Research Council, 1986). From this has come a growing body of opinion that these systems are both economically efficient and sustainable (Abel and Blaikie, 1989). However, this is not yet adequately reflected in pastoralists' involvement in policy formulation or development performance.

Tanzania is blessed with some of the richest pastoral resources in Africa. Foremost amongst these are pastoralists and their traditional natural resource management systems. To date most attempts at pastoral development in East Africa have mostly failed for lack of understanding and adherence to local land tenure arrangements (Lane and Swift, 1989). A development project in a pastoral area of Tanzania offers a case that highlights the costs of failing to recognize and support traditional pastoralism. The Tanzanian government, with the help of Canadian aid, has failed to take account of new advances in development thinking and has persisted with a project that is environmentally destructive, socially unjust and economically unsound.

Barabaig pastoralists of the Hanang plains, Hanang district, Arusha region, northern Tanzania, are currently enduring the negative impacts that result from having their pastures taken from them for a government wheat scheme. This is denying them the means for production, causing land degradation, and impoverishing them. It is therefore timely to examine what is happening to the Barabaig and see whether their land use system might offer a sustainable alternative to this project.

By providing details of the traditional Barabaig pastoral land use system, it will be argued that the way the Barabaig manage natural rangeland resources is a rational and sustainable form of land use. Evidence will be given to show that their common land tenure arrange-

The Barabaig of the Hanang Plains

1. Many non-Barabaig Tatoga are called "Barabaig" by people (including government officials) who do not know the history and details of Tatoga society. Another name, "Mangati", is also widely used for Tatoga people. It is a disparaging term that comes from the Maa words *il Mang'ati*, meaning enemy (pl.).

2. It is impossible to be more accurate about their number as ethnic origin has not been recorded in a Tanzanian census since 1956.

3. Sometimes called "Mangati plains".

4. Balangda is the Tatoga word for salt.

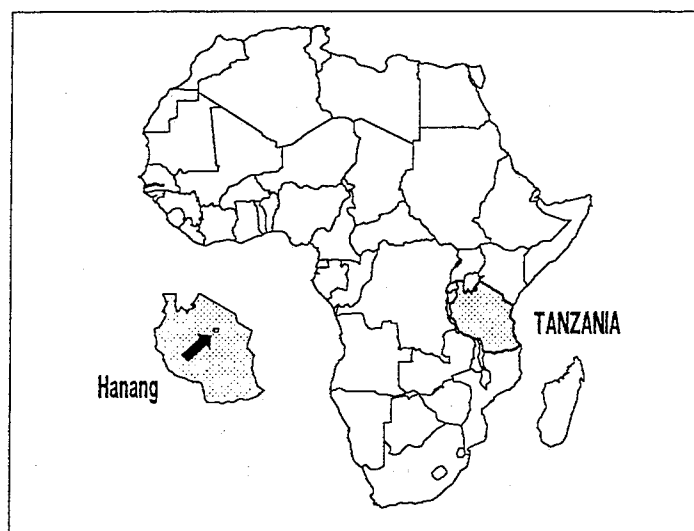
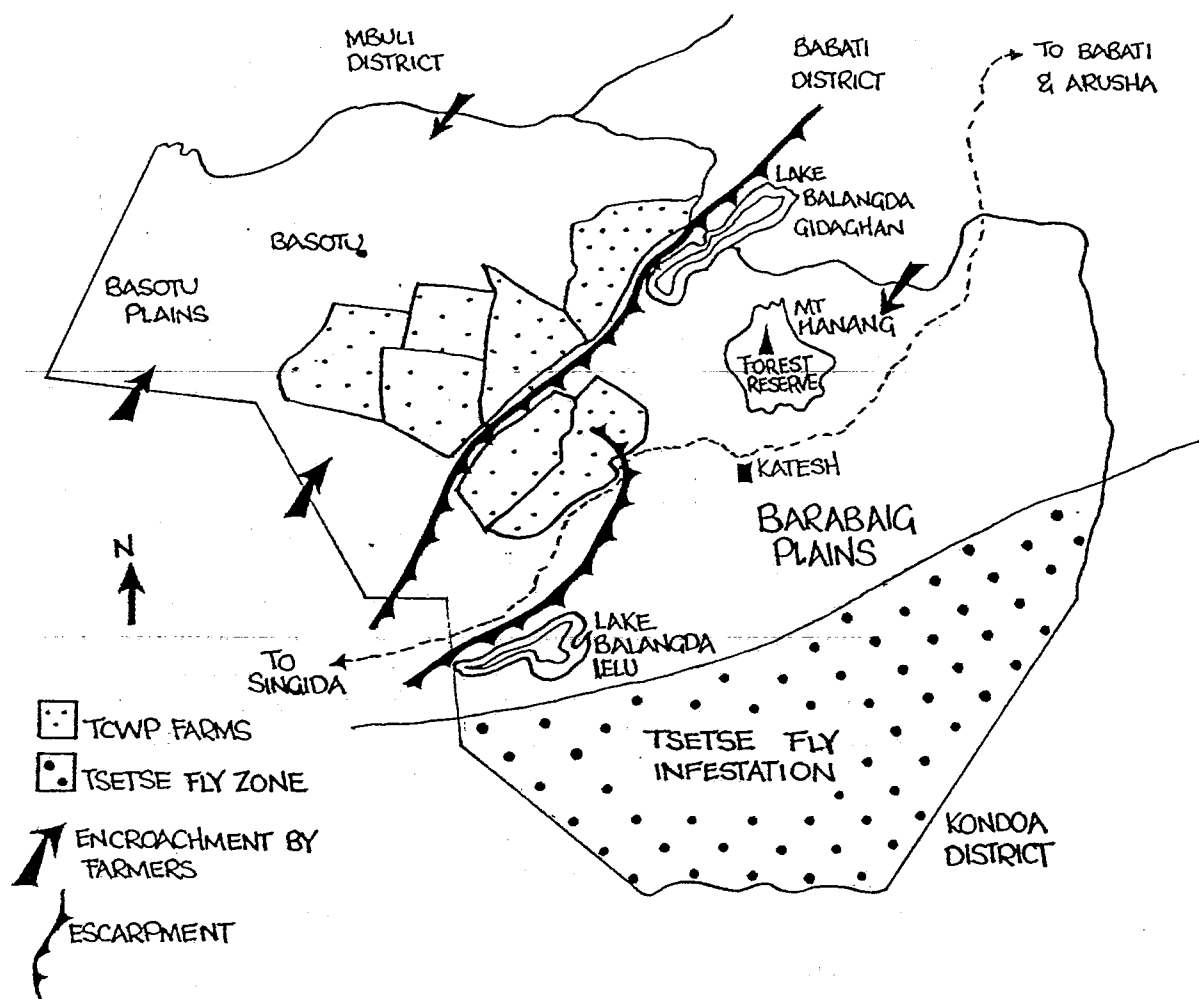
ments are both sophisticated and effective for production and conservation of land. However, an inappropriate and costly development project has undermined this system, causing the Barabaig to suffer and destroying rangeland. By failing to accommodate Barabaig land use arrangements and support Barabaig pastoral production, this project is ignoring the means by which natural rangeland resources could have otherwise been conserved.

The Barabaig are semi-nomadic Nilotic pastoralists who are a sub-tribe or section of a wider ethnic grouping called Tatoga.¹ They number between 30,000 and 50,000 in Hanang district.² They fled from an invasion of the more numerous and powerful Maasai and surrendered occupation of the Serengeti and Ngorongoro highlands more than 150 years ago (Saitoti, 1986). They moved south along the Rift valley as far as Singida before returning to what they now regard as their territory on the Hanang plains (Wilson, 1952).

All Barabaig herders strive to be self-sufficient from production of their cattle. Each household head manages his herd to maximize production of milk, meat and occasionally blood. However, they do not exist on a purely pastoral diet. Only those with large herds receive half or more of their food needs from cattle products. Maize makes an important contribution to the nutrition of all Barabaig, but most especially poorer households with fewer cattle. Grain is obtained through exchange or sale of livestock, and from shifting cultivation by households with the help of communal labour provided by relatives and neighbours.

The Hanang plains are divided by the Great Rift Valley escarpment which separates the northern and elevated Basotu plains from the lowland Barabaig plains to the south (see map, overleaf). The Basotu plains are undulating with a series of depressions and many low hills and volcanic craters. As there are no perennial rivers, crater lakes provide some of the few sources of permanent water. However, even with the provision of dams, built in colonial times, there is a severe shortage of water in the dry season. The Barabaig plains³, on the other hand, have permanent water from lakes Balangda Gidaghan and Balangda Lelu.⁴ These lakes also provided salt for the Barabaig and their livestock. Mount Hanang dominates the landscape rising to a peak of 3,118 metres above the surrounding Barabaig plains. The plains extend to the south as far as the Mureru range. Apart from bushland beyond the range and the forest of mount Hanang, the dominant vegetation is acacia and commiphora woodland interspersed with open grassland. The climate is semi-arid with periodic droughts and an average annual rainfall of *circa* 600 millimetres.

Map and Location of Hanang District



People, Culture and Land

People, culture and land are inseparable elements of human ecology. As such, they are a key to sustainable development. This is as true for people of rich industrial nations as for those of the developing world. Traditional cultures, however, have better maintained the relationship between these three elements. Some peoples have existed on the same pasture resources held in common for hundreds of years without destroying them (Netting, 1978). One of the reasons for their success arises from the way they regard land. They accept that they are an integral part of a wider whole that includes soils, water, vegetation and animals. Being members of a larger entity, they treat land with the utmost respect. They feel able to enjoy its bounty, but not regard it as a commodity and exploit it without considering its future preservation.

The Barabaig regard land as more than a physical resource. For them it can also have great spiritual significance. The Barabaig bury certain of their esteemed elders with a *bung'ed*, which is both the name of the burial mound and the funeral ceremony associated with it. The ceremony involves thousands of people and costs what amounts to a fortune for the Barabaig, including as it does the slaughter of many livestock and the brewing of vast quantities of honey beer. They hold celebrations at the grave site over a period of nine months. An earthen mound (three generations ago the mounds were made of stones) is built up on the grave that eventually rises to a height of three metres. The ceremony culminates when the eldest son of the deceased's first wife climbs the mound and offers a prayer. Before he descends he places his father's stick and sandals on top. Thereafter, the deceased man's clan is forever responsible for the grave's upkeep. Clansmen will visit it for generations to appeal to their ancestor as a medium to *Aset*, their God. The Barabaig still visit the *bung'ed* of Gitangda in the Ngorongoro crater that remains from the time they occupied the area before they were dislodged by the Maasai over 100 years ago (Borgerhoff-Mulder et al., 1989). These burials constitute one of the most important expressions of Barabaig culture. The presence of a *bung'ed* provides an attachment to land that cannot be broken in Barabaig culture.


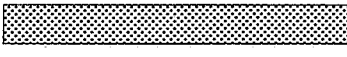

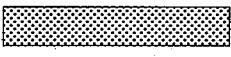





Traditional Seasonal Grazing Rotation

Consistent with the pastoral ideal, the Barabaig make every effort to serve the needs of their livestock. Location of habitation and movement of Barabaig households, therefore, is primarily determined by considerations of animal husbandry.

Variety of soil types, topography, vegetation and the availability of groundwater provide the basis on which the Barabaig classify pastures. They recognize specific forage régimes that are associated with eight geographical features. So as to utilize pasture when it is most productive, and rest areas and allow them to recover, the Barabaig have devised a seasonal grazing rotation that exploits the forage régimes at different times of the year. This is particularly so in drought years when variable

use of pastures is even more important to make the most of scarce resources. The rotation is not always regular as climatic variation can cause deviations (figure 1). Presented here is a stylized model of a complex and variable cycle.⁵ The Barabaig year begins in May. This is the start of the late rains (*mehod*) when pasture availability and livestock production are at maximum. It is a time of relative plenty and recovery from the deprivations of the dry season. It is a time of celebration when a surplus of production and freedom from labour allows people to perform ceremonies that would otherwise be beyond their capacity to organize and supply.

Figure 1
Traditional Grazing Rotation

Season	Mehod late rains			Geyd dry season			Domeld short rains		Muwed long rains			
Month	M	J	J	A	S	O	N	D	J	F	M	A
Forage régime												
Muhajega mbuga												
Darorajand plain												
Hayed hill												
Gileud lakemargin												
Labayd mountain												
Badod range/Rift												
Darabet bushland												
Ghutend river margin												

It is also the time when the Barabaig like their herds to be on the *muhajega* (singular *muhed*). These are depressions on the plains containing fertile soils that sustain a mix of grasses and herbs that the Barabaig call *nyega nyatk*. The Barabaig regard the forage of the *muhajega* as the most productive pasture available to them. It is valued for its capacity to produce high milk yields, growth inducing capacity and recuperative powers for livestock suffering ill health from the stresses of the dry season and droughts. The *muhajega* are found in greatest

5. This model was developed with the help of the Barabaig elders of Balangda division. It is to be remembered that it represents an historical view as movement in the district has become severely restricted in the last 20 years.

Common Property Resource Management

6. There are also sometimes compelling social reasons for Barabaig movements and location of habitation, but these are not the subject of the discussion.

abundance on the Basotu plains. It is on these plains that the Barabaig congregate during the rains. This is only possible for as long as surface water is available.

When the rains stop in May, June or July, and surface water dries up on the Basotu plains, many Barabaig move down the Rift escarpment onto the Barabaig plains. Here they are able to draw on permanent water from wells at lake Balangda Lelu that sustain them through to the months of August, September and October of the dry season (*geyd*). At this time they gather on the plains (*darorajega*) of Balangda and the many low hills (*hayed*) to the east of the lake. As grazing becomes depleted, they begin to exploit the lake margin itself (*gileud*) and move to the mountain slopes (*labayd*). As dry season grazing becomes increasingly scarce, herds are moved further afield to the Rift escarpment in the north and the Mureru range (*badod*) to the south. This is also the time when they are forced to enter bushland (*darabet*) with its associated risks from tsetse flies and predation from wild animals.

As soon as the short rains (*domeld*) begin in November or December, and surface water is found again on the Basotu plains, the Barabaig move their herds back onto the *muhajega*. They remain there for the six or more months of the rainy season (*domeld*, *muwed* and *mehod*) until the water dries up again. But for the river margin (*ghutend*), the *muhajega* supports the Barabaig for longer than any other forage régime. As the *ghutend* is confined to the few small perennial rivers that flow a short distance from mount Hanang, it is much less important than the *muhajega*, which the Barabaig value more than any other forage régime.

Thus, for the Barabaig, availability of water acts as the most limiting factor in pasture use. Whereas most other pastoralists need to locate pastures in the dry season to sustain them (sometimes they are preserved for this purpose), the Barabaig are forced to move away from their richest forage régime when they need it most. This means that they have to preserve the less productive *darorajand* for the dry season when they need to congregate there and be near the permanent water afforded by wells at lake Balangda Lelu.

Barabaig movement of herds and homesteads around the plains is a response to the vagaries of climate, and so as to make best use of scarce and variable pasture resources. To make this possible, the Barabaig accept that everyone must have general access to pastures. Open range land is therefore regarded as the property of the whole community. This enables herders to choose when and where to be on the plains according to their individual assessment of pasture quality.⁶ To facilitate this peripatetic use of forage resources the Barabaig, like other African pastoralists, have a form of common land tenure (see for example Makec, 1988). They describe the land that makes up the range as *ng'yanyida madagh* (*madagh* = common). However, this is not a case of universal and uncontrolled access to land and its resources by everyone and anyone.

The Barabaig recognize the right to protect land: *weta ng'yanyid* (*weta* = protect). In the past the Barabaig provided protection against intruders of their territory by deployment of the warrior set. Due to the breakdown of the process that formed this socio-political unit, and as a result of the imposition of central law and order by the state, they no longer are able defend their territory as they had done before.

All Barabaig accept that their use of land is limited to the right of **usufruct** which permits use of common land only to the point where it is not denuded beyond recovery or to the disadvantage of other users. Overuse is regarded as destruction of the means on which everyone depends.

Land is made up of a bundle of rights that apply to a number of disaggregated resources. These can include certain vegetation species, ground water or trees. Rights of use to some land can be enjoyed by the whole community but certain limits do apply to resources within it.

Within the commons, rights to property range from communal access to exclusive private property. The Barabaig regulate rights of use and access to land through a tripartite jural structure, each with its own sphere of interest and authority; the community, the clan and individual households.⁷ In this system access to and use of land is controlled by a set of customary rules.

The Barabaig recognize that, to make efficient use of resources, access to grazing needs to be controlled to prevent exploitation beyond the capacity to recover. Although surface water is universally accessible to everyone, its use is controlled by rules. Routes to and from water are not to be restricted by the construction of homesteads and water sources must not be diverted or contaminated. Rights to trees are also subject to certain rules. Because of the sacred nature of some trees (*ficus* spp.), the Barabaig protect them by banning any form of use or of damage to them. Other trees that are regularly used for meetings (predominantly *acacia* spp.) are also protected in this way. Clans also have rights that cover property in land. The most important example of this is the *bung'ed*, described above. A well becomes the property of the clan of the man who digs it. Although anyone may draw water for domestic purposes from any well, only clan members may water their stock there. Private property is recognized by the Barabaig in the form of a household's homestead and its surrounds.⁸ For example, a grazing refuge (*radaneda nyega*) is marked off with thorn tree branches to protect forage near the homestead that can support small stock and sick animals that cannot keep up with the main herd. Private property also extends to trees that give shade to the household and those selected to hang beehives.

The Barabaig have a hierarchy of jural institutions that control access to and use of land, interpret customary rules and adjudicate in rare conflicts over rights and duties. Matters concerning the community as a whole are dealt with by a *getabaraku* or public assembly of all adult males. This has ultimate authority on common property rights over open rangeland.

7. A household can be made up of a number of homesteads that can be in a group or spread over a great distance.

8. Sometimes, but rarely, a household is headed by a woman. Even where a household is headed by a man, rights of "ownership" to animals of the household herd are vested in members of the family, including women.

Decisions are made by consensus. If the problem has particular gravity or involves the application of sanction, a committee of the *getabaraku*, called *makchamed*, is formed. The *makchamed* deliberates *in camera* and hands down its decision to the assembly. Women have their own council (*girgwageda gademg*) which has involved itself with land issues. Their interest in land is related to women's special role in Barabaig spiritual life and their jurisdiction in matters involving offenses by men against women. In a recent case, their council called men to account for allowing sacred land to be ploughed up for farming. Desecration of sacred land or the failure of men to protect such property is their particular concern. At the clan level, a clan council (*hulandosht*) controls all clan property, such as *bung'eding* (pl.) and wells. At the neighbourhood level, authority is vested in a neighbourhood council (*girgwageda gisjeud*). Anyone wishing to come and live in a neighbourhood can only do so with the endorsement of this council. In this way, the council effectively controls the entry of too many or too large herds and limit the potential for over-grazing.

Sanctions against those who infringe common property rules generally take the form of an order from whatever judicial moot has authority in the case. Most often the offender is simply asked to desist from the offence. If damage is done, an offender may be asked to pay a fine to the elders, or compensate an individual who has suffered as a consequence of the offence. Fines are collected by a group of youths (*orjorda*) which ensures that the transgressor complies with the ruling. Punishment for more serious offenses can be greater. In the past, the women's council has been known to have issued a curse (*moshtaida*) on male offenders for breach of rules related to sacred land. This curse is most effective as it is known to bring ruin to people's lives and is much feared by all Barabaig.

Two examples highlight the rationale of the Barabaig grazing rotation and give evidence of the level of control they have over land use.

Without adherence to the movement of herds and rotation of pastures, some herders would possibly remain at the river margin (*ghutend*) where there is permanent water and persistent vegetation. However, the Barabaig understand that this would result in destruction of this resource. As herds of livestock are brought to the *ghutend* every day, whatever the season, they know that the forage there is needed by those who are watering their stock. If others are allowed to permanently graze it, this forage would soon be depleted and not be available to those who go there to draw water. This would ultimately result in destruction of the land through over-grazing and damage from concentration of hoof traffic. The Barabaig, therefore, have a customary rule that bans settlement at the *ghutend* and denies herders the right to graze the forage if they are not there to water their stock.

As water in the crater lakes of the *muhajega* is insufficient in the dry season to sustain all the livestock that congregates there, some herds have to be moved elsewhere. The wells of lake Balangda Lelu provide

alternative permanent water. However, if the pastures of the *darorajand* of Balangda are deficient, it restricts access to the wells as herds cannot remain in the area for lack of grazing. Like restricted use of the *ghutend*, grazing of the *darorajeg* must be limited if pasture is to be available at the time when it is most needed. To achieve this, the Barabaig traditionally ban permanent habitation on the *darorajand*. In the past, all Barabaig accepted this. They knew it was the only way to protect the grazing for the time when it would be needed in the dry season. However, with increased land pressure from the loss of *muhajega* to farming, some Barabaig have contravened the customary rule and moved to live permanently on the Balangda *darorajand*.

This customary rule was made a by-law by the Barabaig Native Authority. Gejar, Chief of the Barabaig Native Authority *circa* 1936-1952, recognized the threat that unseasonal habitation of the *darorajand* would have on this vital resource. He intervened by making a by-law out of the customary rule protecting the *darorajand*. Today, neither customary rules nor new state laws have protected the *darorajand*. This legal vacuum has created a case of chaotic open access in which the Barabaig have had to go against their own indigenous knowledge and offend their rules and reside in numbers in the Balangda area.

Loss of Land

Before colonial intervention, there was less land scarcity on the Hanang plains. Populations of people and cattle were smaller and limited by disease and marauding by the Maasai and neighbouring groups. However, with the provision of measures to improve human and animal health and the imposition of peace, the population of Hanang district has increased dramatically (Schultz, 1971). Also human pressure on land in the Mbulu highlands resulted in Iraqw farmers encroaching on what was Barabaig grazing land (*ibid.*). Although the British administration attempted to stop this it proved impossible (*ibid.*). After a brief respite from encroachment by way of the Barabaig Native Authority prior to independence, encroachment of Barabaig pasture land continues to the present day.

Practice of the seasonal grazing rotation means that at times in the year, and sometimes for long periods, land is free of human habitation and grazing livestock. This has led some people into thinking that some pasture land is unoccupied. It is because of this that Barabaig pastures are taken over by others and put to non-pastoral use as they are deemed to be vacant by those who want to acquire them.

The inherent fertility of the *muhajega* makes it ideal for farming. Inevitably, farmers take the best agricultural land, and just as this land has attracted Iraqw farmers, so its agricultural potential has also been noticed by developers. This has led to government appropriation of large tracts of land, including most of the *muhajega* on the Basotu plains, for an extensive wheat scheme.

Tanzania Canada Wheat Program

In response to an expected increase in demand for wheat, the Tanzanian and Canadian governments agreed to develop the Basotu plains for a state wheat scheme - the Tanzania Canada Wheat Program (TCWP). The scheme is based on a technological package reminiscent of the "green revolution", involving the mono-cropping of hybrid varieties with large-scale mechanical equipment along the lines of prairie wheat farming in Canada. The Tanzanian partner in the venture - the National Agriculture and Food Corporation (NAFCO) - set about acquiring land in the area for seven farms of 10,000 acres each, making a total combined area of 70,000 acres for the scheme (Lane and Pretty, 1990).

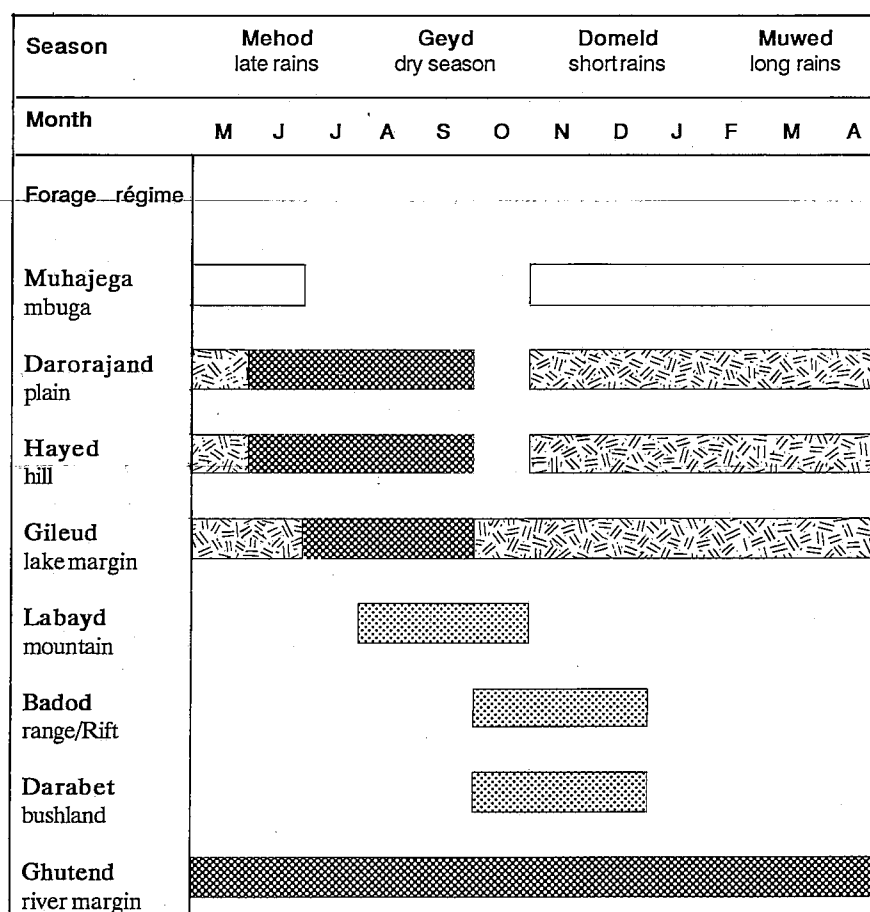
In 1968, a Canadian mission had already identified many of the soils on the Basotu plains, and those of the *muhajega* in particular, as "highly suitable for mechanized dryland farming" (Fenger et al., 1986). This land was described as "idle" (Young, 1983). However, as some Barabaig herders were resident there, and compensation was paid to some of them for the loss of their homes, it must have been obvious the land was occupied. It can only be assumed, therefore, that those who regarded the land as "idle" really meant that it was under-utilized and better put to a more productive purpose. This is perhaps why a decision was made by NAFCO to summarily obtain titles to a total of 100,000 acres - 30,000 acres more than they had applied for and the Barabaig had expected to accept (Lane, forthcoming).

The TCWP farms now cover 12 per cent of all Hanang district land (Lane and Pretty, 1990). However, the significance of this loss to the Barabaig is far greater than just the land area involved. The farms cover the greatest concentration of *muhajega*. If this is combined with other *muhajega* lost to encroachment by farmers, the Barabaig are denied access to virtually all of this forage régime so important to pastoral production. If the spreading peri-urban development of Katesh town on the Hamit river and village expansion in the district is added to the land lost to the TCWP, together with the limited access afforded by the mount Hanang Forest Reserve, the salt pan of lake Balangda Lelu and tsetse fly infested bushland, it is clear that the impact of the loss is greater than would seem at first. The combined area of loss may amount to as much as 50 per cent of the area that was once available to Barabaig herds for grazing.⁹ However, the loss of nearly all the *muhajega* has seriously altered the seasonal grazing rotation and had a negative effect on herd productivity and Barabaig welfare.






9. This can only be quantified by an aerial land use survey of the whole district.

The impact on the seasonal grazing rotation by the loss of *muhajega* (figure 2) has forced the Barabaig to adopt a new grazing pattern, and rely more heavily on the seven remaining forage régimes.¹⁰

Figure 2
New Grazing Pattern



Legend

traditional use		increased use	
pattern maintained		new use	
traditional grazing			
land, no longer in use			

Impact of Land Loss on Seasonal Grazing Rotation

10. There are a few very much smaller *muhajega* on the Basotu and Barabaig plains, but they are not large enough to sustain any animals and their contribution to cattle production is insignificant compared with those lost to the wheat scheme.

They have been forced to use *darorajand*, *heyed*, and *gileud* forage when they would otherwise be rested from grazing. Further, together with the *ghutend*, it means that these are more intensely used at traditional times of use. Only the mountain (*labayd*), Rift escarpment (*badod*) and bushland (*darabet*) are relatively unaffected by the loss of the *muhajega*, as these offer only sparse forage at any time, and are unable to match the productivity of the other forage régimes because of the poorer fertility and water holding capacity of soils. Changes in their grazing rotation caused by the loss of the *muhajega* have implications for the Barabaig and the Hanang plains.

Environmental Destruction

11. Whilst this has yet to be quantified, there is no reason to doubt Barabaig assessment, as they have, like other traditional pastoralists, an intimate and detailed knowledge of rangeland ecology.

12. An Open Letter to the Canadian People from the Barabaig of Tanzania, in Paavo (1989).

13. This is not to deny that convergence of livestock trails at water points has caused some minor soil erosion in these localities.

The Barabaig claim that the enforced adoption of the new grazing pattern is having a negative effect on the quality of their pastures. By grazing forage régimes more intensely than before, and failing to rest them to enable them to recover, the Barabaig are becoming unwilling parties to the destruction of the land. For example, on the *darorajand*, the added grazing is causing a decline in perennial grasses and an increase in the percentage of annual herbs in the sward. The Barabaig know this herbage is less persistent in the dry season and reduces the overall productivity of the pasture.¹¹ A grass, called *mejojiga* or "milk grass" by the Barabaig because of its milk producing capacity, has been completely eradicated by cultivation on the farms. On the *gileud* and *ghutend*, destruction of vegetation cover by excessive hoof traffic is making land vulnerable to erosion and causing the expansion of bare soil pans. Without entering the debate about the qualitative nature of pasture changes that is well documented elsewhere (see Abel and Blaikie, 1989), it is enough here to accept that the Barabaig have identified a problem in their rangeland ecology and are concerned for the future viability of their pastures under the current level of exploitation.

The Barabaig also claim that mechanized mono-cropping of wheat is eroding the land.¹² This is conceded by the authors of a report on the soils of the Basotu and Balangda areas commissioned by Canadian aid (CIDA). They found that the characteristics of the Basotu soils and the prevalence of high-intensity rainfall make the land susceptible to erosion by "the removal of the natural vegetation for agricultural development [which] exposes the surface soil to accelerated erosion processes" (Fenger et al., 1986:70). The report goes on to say that: "The formation of gullies is dramatic and changes result within a few hours as large quantities of soil are moved rapidly downslope. Although gullies are the most obvious and are immediately destructive to the land base, the general downslope movement of sheet erosion may be equally detrimental" (ibid.:72). Examples of these forms of erosion are graphically illustrated in the text. What the report fails to say is that this erosion has come about because of a failure to protect soils by the maintenance of vegetation cover that was once conserved by the Barabaig with their seasonal grazing rotation.¹³

Social Injustice

The appropriation by the state of land from indigenous inhabitants inevitably raises issues of justice. This is as true for the Barabaig as it has been for other pastoral groups in East Africa (Lane and Swift, 1989). Injustices have been inflicted on pastoralists through the misuse and abuse of laws to dispossess them, and in the manner of their dispossession. Further injustice comes from the suffering caused by the loss of access to those resources relied on by the Barabaig for their livelihoods.

To date, Barabaig resistance to land appropriation has failed to stop their alienation from land. Repeated complaints made to senior government and party officials over the years have not brought an effective response. Even with the creation of a separate Hanang district from what was once Barabaig division (which covers the same area as the Barabaig Native Authority), Barabaig interests have not been well enough represented by local government. NAFCO continues to expand wheat cultivation and to withdraw land from pastoral production. They have also denied the Barabaig access to grazing, water and salt by barring traditional rights of way across the farms. The cost to the Barabaig of this denial is only exceeded by the destruction by cultivation of more than 50 of their graves on the farms, which has caused the Barabaig considerable grief.

The Barabaig contend that under Tanzanian law they have customary rights to the land of the wheat farms.¹⁴ Being rightful occupiers of the land, they cannot be evicted without due process of law.¹⁵ They claim NAFCO failed to adhere to that due process when they acquired the land for the farms, and thus are illegally occupying Barabaig land. A reading of the law in relation to customary rights to land suggests that there is nothing in Tanzanian law that denies pastoralists' communal claim to rights over common grazing land (James and Fimbo, 1973; James, 1971), and their rights are in no way inferior to individual claims to private land that have succeeded in the courts.¹⁶ In theory then, the Barabaig should be able to successfully assert their rights to possession of common land and defend it from wrongful alienation.

In 1984, some residents of Mulbadaw village took NAFCO to court and contested the appropriation of land for the Mulbadaw wheat farm.¹⁷ After the initial High Court decision in their favour, the Appeal Court ruled against the villagers on a technicality.¹⁸ However, the more fundamental issue of whether the Barabaig have customary title to the land was not resolved. With continued expansion of cultivation, the Barabaig have returned to the courts. In a current case, they are disputing NAFCO's occupation of the 30,000 acres acquired in excess of the 70,000 acres originally requested. They want full compensation for the loss of this land. Progress in this case was set back by the issue of a government order extinguishing any customary claim to land in the vicinity of the TCWP farms.¹⁹ This order was made retroactive to a date

14. Customary rights to possession were conferred on indigenous occupiers of land by the 1923 Land Ordinance which remains law to this day.

15. Conditions for the appropriation of land are set out in the 1967 Land Acquisition Act.

16. Lagwen Irafay and 19 others vs. Nangwa Village Council, Civil Case No. 4 of 1982, High Court at Arusha.

17. Mulbadaw Village Council and others vs. NAFCO, Civil Case No. 10 of 1981, High Court of Tanzania, Arusha.

18. NAFCO vs. Mulbadaw Village Council and others, Civil Appeal No. 3, Court of Appeal, 1985.

19. Extinction of Customary Land Rights (Amendment) Order, 1989, Government Notice No. 260, 28.7.89.

Unsound Economics

prior to the lodgement of the Barabaig application to the courts. Barabaig lawyers argue that the order is unconstitutional as it attempts to extinguish the entrenched aboriginal rights of all Tanzanians without following proper legal procedures. The human rights monitoring group, Africa Watch, believes this order breaches several provisions of the African Charter on Human and People's Rights, to which Tanzania is a signatory. They also believe its retroactive effect contravenes a basic principle of international human rights law and natural justice (Africa Watch, 1990).

In socio-economic terms, the Barabaig can show that the reduction in the resource base by the withdrawal of the *muhaajega* is being reflected in a decline in cattle numbers and a worsening in the quality of their lives. According to interviews with over 500 pastoralists in the Gehandu and Mogitu villages areas adjacent to the wheat farms, cattle herds in 1988 had declined to a third of their size in 1981 as a result of mortalities attributed to the stress of reduced grazing. Also Hanang district health statistics show that child health and nutrition are significantly worse in communities near the farms than found in other areas beyond them (Gitagnod, 1988). As yet, it is impossible to reveal a direct link between the TCWP and lack of Barabaig well-being. However, indications are that, whatever the scheme is achieving in production of wheat, it is failing to advance the welfare of neighbouring Barabaig communities.

It is argued by supporters of the TCWP that the scheme has a national importance which outweighs the problems it causes for the Barabaig. However, this apparent justification becomes less tenable under examination of the scheme's economic performance. Although the farms satisfy nearly half the national demand for wheat, they do not satisfy the major goal of helping Tanzania become food self-sufficient. Wheat only makes up 2-3 per cent of food crop consumption (Carter et al., 1989). Moreover, most of the demand comes from wealthy urban dwellers and not the rural poor (ibid.). In addition, because of the high technology and capital intensive nature of production on these farms, the project has created more of a dependency on Canadian aid than it has aided self-sufficiency in food production (Freeman, 1984).

The economic performance of the TCWP has also been challenged by both internal evaluations and independent assessments. CIDA and the Tanzanian government continue to rely on past favourable financial assessments that showed the scheme to have a positive cost/benefit ratio and a 40 per cent internal rate of return (Stone, 1982). However, in 1982 the economic realities of the TCWP came to light. Two internal evaluations revealed that, while the TCWP appeared to be profitable in financial terms, it was in fact uneconomic, with the true costs exceeding the true benefits (Prairie Horizons, 1986; Michael Mascal and Associates, 1986). In 1986, an independent study was done with the purpose of testing the efficiency of resource use and to find out whether

it makes economic sense to grow wheat by the methods employed on the scheme compared with smallholders using oxen, and relative to the cost of direct importation of wheat from the world market (Carter et al., 1989). The study concluded that the scheme had a negative net financial profitability and a negative benefit-cost ratio. For the first time, the "sunk cost" of Canadian aid was taken into account and given an opportunity cost to the Tanzanian economy. When "all costs and benefits from the point of view of society as a whole" and not just those "costs and returns as faced by the individual or firm" were taken into account, it was found that the scheme was unprofitable (ibid.:17). This led to the conclusion that the TCWP "is not economically viable nor does it make effective use of domestic resources in saving foreign exchange for Tanzania to use large-mechanised wheat production to satisfy the domestic demand for wheat" (ibid.:24).

Persisting with Old Orthodoxy

The plight of the Barabaig is typical of a wider problem for pastoralists throughout Africa. Common land tenure systems have long been thought incapable of efficient land use (Lane and Swift, 1989). Evidence of rangeland erosion since colonial times has been blamed on the irrational behaviour of pastoralists who accumulate cattle in excess of their economic needs for reasons of social prestige. Credence was given to this view by reference to the "cattle complex" that dwelt on the cultural importance of cattle in traditional pastoral societies (Herskovits, 1926). This anthropological legacy has since been reinforced by the "tragedy of the commons" scenario which posits that individual herders have no incentive to restrict stock numbers, and the herding of private animals on communal pastures will inevitably lead to overgrazing and land degradation (Hardin, 1968).

Despite the years that have elapsed since Hardin first published his essay more than 20 years ago, and a mounting challenge to it on both theoretical and empirical grounds (see Runge, 1986), it has remained a powerful force in the minds of government officials and aid agency personnel to this day. This is revealed in the continued espousing of the "old orthodoxy" that pastoralists have too many cattle and that, because of uncontrolled use of the commons, they will inevitably destroy the land through overgrazing (Lane and Swift, 1989:1). Ignorance of the nature of pastoral production systems and the value of traditional pastoral common land tenure arrangements, together with acceptance of flawed theories, have led to policies that work to undermine traditional pastoralism and support for privatization of common land.

Many studies have shown that pastoralists do not have excessive numbers of livestock. Even so called "pure pastoralists" who practice a minimum of cultivation rarely have enough livestock on which to subsist on a pastoral diet (Swift et al., 1989). The average total number of cattle in a Barabaig household at Balangda is only 60 animals, or six per person. As only 30 per cent of these are milk cows, it means that each person receives milk from only two cows. As Barabaig cows provide only just

20. Daily News, 21 January 1982.

over one litre of milk a day for human consumption and their lactation is only for around eight months, current herd size is clearly not enough for everyone to be self-sufficient in milk throughout the year. That is why the Barabaig and other Tanzanian pastoralists cultivate crops to supplement their diet.

Despite the reality of pastoral existence in Tanzania, new thinking on pastoral development is not accepted by planners. The Comment column of the *Tanzanian Daily News*, an editorial column which frequently expresses official government policy, reiterated the claim, made in the past by the British colonists, that pastoralists keep excessive numbers of cattle which leads to overgrazing; "Therefore the Party [CCM] and government leaders at all levels must educate and persuade cattle keepers in particular to de-stock in order to improve their own lives and preserve the soils and pastures that sustain their animals."²⁰ In accepting this reasoning, the government is ignoring Barabaig needs for survival and the fact that land degradation comes more from the land alienation than excessive numbers of stock.

An almost *verbatim* expression of the "tragedy of the commons" scenario is found in an article detailing measures for "proper management of rangelands" by an official of the Tanzanian Ministry of Agriculture and Livestock Development:

"...this practice of grazing private livestock on communal land constitutes the single major constraint to improved management of the natural pasture lands. The inevitable result of this system of livestock production is that the cattle owners keep excessive numbers of livestock which in turn leads to overgrazing, soil degradation, low fertility and high mortality rates. However, in order to allow for the best possible care of the agricultural land in the future, users will be allocated land on the basis of lease-hold, thus ensuring that they get full legal protection restriction of animal numbers to any reasonable balance with the forage resource has proved difficult due to lack of land ownership rights and communal land ownership." (Bilali, 1989)²¹

21. Despite a disclaimer by the editor of the above publication that the views expressed by contributors of articles are not necessarily those of the governments of SADC member states, it is clear from other official sources that it is an accurate reflection of official thinking.

Despite Tanzania's ranking as one of Africa's highest cattle resource countries, livestock production per capita has declined over the years (Mbilinyi et al., 1974). In response to this, in 1982 the government published a National Livestock Development Policy that remains a guide to the direction of development in the livestock sector to the present day (Tanzania government, 1982). The preamble acknowledges that 99 per cent of livestock were in the hands of traditional producers, and that there is enormous potential for increased production. Yet the measures given to convert this wealth exclude traditional pastoralism from support because it is regarded as backward and unproductive:

"The long term objective is therefore to bring about changes in traditional producers attitude and practices hereby in-

creasing productivity to the level where this sector evolves into the modern sub-sector." (1982:4)

The "modern sub-sector" envisaged in this context is made up of private and state ranches that do not include much pastoral involvement (Mustafa, 1986). It seems that a necessary aspect of modernization is the transformation of the traditional sector, which invariably means the destruction of pastoralists' traditional land use management systems based on common land tenure.

The Policy also suggests encouraging pastoralists to be moved out of over-stocked areas to "lower-stocked or virgin areas suitable for livestock" (Tanzania government, op.cit.:4). However, it does not consider the alternative of resettlement of farmers out of pastoral areas so that pastoralists can benefit from the full production potential of the land. The Policy concedes that "present users need to be given assured rights over land they are using" (ibid.:5). Although it recognizes the existence of communal land tenure, it implicitly promotes private property as a means of giving land holders security so that they will "feel confident that their investments of effort and money will be beneficial to them and their families" (ibid.:5). It also leaves unexplained how pastoralists might attain security of land when rights of access and use are conferred on the whole community. If they are to rely on existing authorities to administer these rights and protect common land, then the past performance of government would suggest that the prospects for pastoral land rights are not encouraging.

A Possible Way Forward

As a counter to the old orthodoxy and as a means of averting what is happening to the Barabaig and advancing the prospect of sustainable development on the Hanang plains, changes are needed in the way development is being conducted in pastoral areas of Tanzania. This is not so much to single out pastoralists for preferential treatment, but simply to address the failures that have penalized them in the past. An important first step in this process is to acknowledge the value of pastoral common land tenure systems as a means of securing pastoral livelihoods and of conserving natural resources.

Consistent with the nation's socialist ideals and expressed commitment to social equity, the needs of the Barabaig should be given high priority. These needs have been unequivocally expressed in an Open Letter to the Canadian People from the Barabaig (in Paavo, 1989). In this letter they are asking that their customary rights to the land they occupy be recognized and access to that land secured. For this to happen, it is vital that the court case is allowed to be judged on its legal merit. This excludes interference from the executive (Africa Watch, 1990). Without a legal precedent confirming pastoralists' customary communal rights to land, the future of the Barabaig and the land on which they depend remain threatened. This has implications beyond the Barabaig in Hanang district. It is a matter of utmost concern to other pastoral groups, and

other communities, who have common land tenure systems. If the Barabaig case is not successful, then legislation needs to be drafted so as to allow indigenous inhabitants to better defend their rights and more effectively contest wrongful alienation from their land.

Once land security is attained, a new direction for development needs to be found which will support pastoralism more effectively. This will require revision of policies not only to express the potential of livestock production, but also to cater specifically for pastoralists' needs. The condemnation of common land tenure should be replaced by measures that acknowledge the value and importance of these systems. Development projects should be designed to make better use of pastoralists' indigenous knowledge and skills in resource use. One way of doing this is to build up pastoral communities' capacity to manage local assets and resources. More infrastructure is needed to improve stock health and livestock and crop productivity to levels that will better enable the Barabaig to exploit the market for the benefit of both themselves and the wider national economy.

At the district level, new initiatives should start with local structures. Participatory research methods should be employed to uncover constraints on livestock production and welfare needs of pastoralists. The same participatory processes should be used to empower local communities to overcome these constraints. This will require government officials and aid agencies taking more interest in and working more closely with local communities. To facilitate this, it will be necessary to identify and support a unit of social organization that has its roots in indigenous culture. Through this institution, the Barabaig can be more fully consulted and their views taken into account in developments that affect them. "Area-based" social services should be provided to more effectively reach semi-nomadic pastoral communities (Swift, 1989).

If these measures are taken, much of the human suffering and damage to the environment can be repaired. The Barabaig still offer an opportunity to support a coherent traditional and sustainable land use system that could show the way for development in other pastoral areas of Tanzania and replace the old orthodoxy that has to date blighted pastoral development throughout much of Africa.

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