

Irrigation reform in Malawi: exploring critical land-water intersections

Anne E. Ferguson and Wapulumuka O. Mulwafu

Malawi, similar to other Southern African countries, has adopted new water, land, and irrigation policies and legislation involving promotion of decentralized management, user groups, and privatization of resources previously under customary or public tenure. We examine how the water and land policies intersect with the new irrigation policy, and are being played out in the context of two smallholder irrigation schemes in the Lake Chilwa Basin, which are being transferred to farmers' associations. This new policy setting has opened the door to contestation over rights of access to irrigation scheme plots by traditional authorities, scheme management personnel, and farmers. Rather than adopting a sector-by-sector focus, we examine how the policies are intertwined and interact with existing customary rights and practices in ways that have not been fully considered. The study demonstrates the need for a livelihoods perspective in determining who benefits and loses from these new policy directions.

Keywords: Smallholder irrigation, land-water intersections, livelihoods, Malawi

Introduction

Over the last decade Malawi, similar to other Southern African countries, has revised most of its environmental and agricultural policies and laws. Since 1999, new irrigation, land, and water policies and supporting legislation have been approved by Parliament. The thrust is to privatize resources which once were under customary tenure or which were viewed as a common good. Customary land is to be titled, use of water for productive purposes will require permits, and government-run smallholder irrigation schemes are being turned over to users. These reforms aim to dramatically alter access to critical land and water resources for rural livelihoods in one of the poorest countries in the world.

This paper focuses on the transfer of two government-run smallholder irrigation schemes in the Southern Region to farmers' associations in the context of the implementation of new irrigation, land, and water policies and pending laws. It provides a place-based analysis of the early effects of these reforms, drawing attention to how international and national policies and laws interact with local histories, practices, and economic and political hierarchies to yield sometimes unexpected results. The following questions are addressed: How are reforms underway in the land and water sectors likely to affect irrigation reform and smallholder irrigation scheme farmers? How do the new reforms interact with existing customary land- and water-related rights, privileges, and practices? Who is likely to benefit from the transfer of the irrigation schemes to farmers' associations? Will these reforms provide smallholder farmers – especially the disadvantaged – with equitable and secure rights to land and water resources as the policies espouse, or will they create uncertainty and entrench privileged interests?

The policy context

As land pressure and climate change intensify, Malawi is turning increasingly to irrigated agriculture as a means to increase production. Irrigated agriculture is regarded as a means to boost incomes and food security, and is considered to be a way to reduce poverty by government and donors. Malawi's new National Irrigation Policy and Development Strategy (GOM, 2000) reflects this stance. It calls for the rapid phase-out of government support to the sixteen smallholder irrigation schemes, and their transfer to newly-created farmers' organizations. The policy also advocates the expansion and intensified use of informal irrigation by small-scale farmers along streambanks, drainage lines, and in wetlands, a form of irrigation has received little previous government attention.

Transfer of government-run irrigation schemes to farmers' associations, often referred to as irrigation management transfer (IMT), has been widely promoted as a means to decentralize functions of the state, to reduce public expenditure, and to instill a sense of local ownership and responsibility. Malawi's new irrigation policy thus constitutes a significant departure from the past emphasis on costly government-supported smallholder irrigation schemes administered in an authoritarian, top-down fashion. Four conditions are usually present in successful IMT. First, IMT must improve the life situations of a significant number of scheme members; second, the irrigation system must be central to creating such improvement; third, the economic and financial cost of self-management must be an acceptably small proportion of improved income; and finally, the proposed organizational design must have – and be seen to have – low transaction costs (Shah et al., 2002:5; also see Vermillion and Sagardoy, 1999; Vermillion, 1997). In Malawi, although some aspects of IMT were adopted in the mid-1990s, it was not until 2000 that more fundamental measures were taken towards implementation.

Irrigation reform is being carried out in the context of other equally sweeping changes. Malawi's new Poverty Reduction Strategy Paper (GOM, 2002) is described as the "centre of government's plans and priorities," informing all new policy and legal reforms. The four pillars of the policy are pro-poor economic growth, human capital development, improving the quality of life for the most vulnerable, and good governance. The Local Government Policy and Law (GOM, 1998a and 1998b) have set in motion sweeping changes in how government will operate. While line ministries will retain responsibility for policy formation, enforcement, standards, and training, most administrative and political functions once concentrated in ministries at the national level are being transferred to the district and municipal levels under the control of District Commissioners and the District Assemblies. The District Development Committee and Plan are the principal means by which integrated sectoral planning is to be achieved. Marking a significant change from the past, civil servants now are to be accountable to the populations they serve, not to their parent ministries in central government.

Malawi's land and water policies have recently been revised as well. The new Land Policy (GOM, 2001) proposes to privatize customary land under the rubric of creating "customary estates." Titling committees are to be established at the level of Traditional Authorities (TAs) and Districts. Wetlands are to be designated as public lands under the control of TAs. The water policy has been under revision since 1999, and the final version of the new water law has yet to be enacted. The newest version of the National Water Policy (GOM, 2004), calls for the establishment of seventeen large Catchment Management or River Basin Authorities. It embraces the user pays principle in its approach to the management of both primary and productive or commercial water. Those using water for productive purposes are expected to obtain water user or abstraction permits. While a right to primary water is recognized, communities, non-governmental organizations (NGOs), and other entities are expected to bear the costs of infrastructure development and maintenance (Ferguson, in press; Ferguson and Mulwafu, 2002).

By and large, these policies and laws have been drafted and enacted on a sector-by-sector basis. Until recently, little regard was given to their interactions or to their relationships with local customary practices. In this paper, using a place-based analysis of two smallholder irrigation schemes, we draw attention to these critical interrelationships, arguing that the new land, water, and irrigation reforms need to be considered together and set within the broader framework of livelihood strategies and rights (Wolmer and Scoones, 2003).

Research sites and methodology

Irrigated land includes formal irrigation schemes operated by government and private estate owners, as well as lands along streambanks, in low-lying areas of residual moisture, and in wetlands cultivated by small-scale farmers. The formal irrigation schemes often are located in, and are surrounded by, wetlands and depend on the same water sources. An FAO report (1996) estimated that there were 76,410 hectares (ha.) of irrigated land in Malawi, of which 65% (50,000 ha.) was informal, or *dimba* cultivation, and the rest was under formal irrigation. A more recent World Bank estimate is 28,000 ha. are under "formal or semi-formal" irrigation, of which 6,500 ha. are under self-help smallholder schemes, 3,200 ha. are under government-run smallholder irrigation schemes, and 18,300 ha. are in estates. The common estimate for the potential irrigated area (not limited to wetlands) is between a quarter- and a half-million ha.

Our research focused on the Domasi and Likangala watersheds in the Lake Chilwa Basin in the Southern Region. This basin is home to six of Malawi's sixteen smallholder irrigation schemes slated for transfer to farmers' associations. Two government-run, smallholder irrigation schemes form the basis of our study: Domasi Irrigation Scheme located on the Domasi River in Machinga District, and Likangala Irrigation Scheme on the Likangala River in Zomba District. The Domasi Scheme covers approximately 500 ha. and has 1,500 farmers. Likangala Scheme is the largest one in the Likangala Complex, which comprises four smaller schemes as well – Khanda, Njala, Chiliko, and Tsegula. The study focused on the Likangala Scheme itself, which is 450 ha. in size and has nearly 1,300 farmers. Plots on these gravity-fed schemes are 0.25 acres in size. Rice is grown on both during the rainy season. In the dry season rice, sweet potatoes, maize, pumpkins, watermelons, tomatoes, and other vegetables are produced. Some of the plots are reassigned in the dry season for temporary use by others.

These schemes were established in the late 1960s and early 1970s to demonstrate to the local communities the methods and benefits of intensive cash crop production. Villages – originally located on the customary land taken over by government for the irrigation schemes – were resettled, given irrigation plots, and in some cases received other compensation. In contrast to other smallholder irrigation schemes established in the same period, neither Domasi nor Likangala experienced significant resettlement of farmers from outside the local area as occurred elsewhere (Chirwa, 2002). One exception was the Malawi Young Pioneers of the Banda era, who were brought in as agricultural trainers and disciplinarians. Between the late 1960s and the 1980s, the schemes were fairly well maintained but run in a top-down, authoritarian fashion by government (Krogh and Mkandawire, 1990). They received financial and technical support from government and donors, especially the Taiwanese Agricultural Technical Mission. The deepening economic and political crises of the 1980s and the withdrawal of Taiwanese support forced government to reduce its role in scheme management and upkeep. During the 1990s, in particular, physical infrastructure continued to deteriorate. As Malawi made the transition from authoritarian rule to a multi-party democracy in the mid-1990s, farmers often ignored cropping calendars and other rules established during the Banda presidency. Thus, since the early 1990s, many of the formal authority structures governing the smallholder irrigation schemes have lost legitimacy. Farmers feel that the old rules and regulations were unfair and, like the regime that imposed them, should be rejected.

At the time of the study, the Likangala and Domasi Irrigation Schemes differed in the condition of their physical infrastructure, degree of farmer mobilization, previous support, and present source of funding for renovation and transfer to farmers. Since its inception in 1972, Domasi Irrigation Scheme has been fairly well supported by government and donor organizations, particularly the Taiwanese Agricultural Technical Mission and, most recently, the International Fund for Agricultural Development (IFAD). Although still in need of renovation, its physical infrastructure is in better condition than that of Likangala Scheme. Domasi is one of eight schemes included in the IFAD-funded Smallholder Flood Plains Development Program for physical renovation, farmer training, and transfer of ownership to farmers' associations. It has formed a Water Users' Association, has adopted a constitution and by-laws, and is likely to be the first irrigation scheme in Malawi to be formally handed over to the farmers' association. Likangala Scheme, in contrast, has received somewhat less government and donor support since it was established in 1969. Renovation and farmer training have proceeded slowly, and it was not until August 2004 that preparations for establishing a farmers' association were set in motion and a new constitution was adopted. Likangala is presently relying on much-delayed Highly Indebted Poor Country funds for renovation and transfer to farmers, but it is likely that IFAD, with funding from the World Bank, will become the new donor.

The study used quantitative and qualitative methods. In 2003, we conducted a survey of 123 farmers on the two schemes to gather baseline information on access to plots, farming and marketing practices, water use, and conflicts. We interviewed 63 (51%) farmers on Domasi and 60 (49%) on Likangala. An irrigation transfer or handover survey – to gather information on scheme governance and farmers' knowledge of and participation in the transfer process – was administered to 120 of those farmers, 61 (51%) from Domasi and 59 (49%) from Likangala. Overall, 26% of the respondents were women and 74% were men. All those interviewed in both surveys were plot owners.

Two field assistants were assigned to live on the schemes for the three-year period. In addition to engaging in participant observation and writing field notes, they carried out structured and semi-structured interviews with farmers and irrigation scheme committee members on assigned topics. The qualitative research enabled us to gather information on tenure and land-use practices, conflicts over land and water, and scheme governance that

was either not accessible or not reliable via formal survey research. To learn about developments in the policy arena, senior researchers interviewed key policy makers at the national and local levels twice a year. These included interviews with officials in the Ministry of Water Development, the Department of Irrigation, and the Ministry of Lands, along with major donors, including IFAD, USAID and the World Bank. At the local level, Irrigation Scheme Managers, committee members, Agricultural Development District officials, district authorities, and project managers of the Balaka Concern Universal office were interviewed. Finally, we engaged policy makers, project implementers, and farmers in an interactive process whereby we presented preliminary research findings for discussion through a series of workshops conducted over the research period.

Key findings

Six interrelated issues emerged from the research that are relevant to policy makers and academics concerned with equity and poverty alleviation in the implementation of the new irrigation, land, and water policies. Discussions with the Director of IFAD in Malawi and with officials in the Ministry of Agriculture and Irrigation, and a review of the literature on irrigation schemes in Malawi suggest that many issues identified below are not unique to Likangala and Domasi, but rather are arising on other schemes as well.

Livelihood strategies

The study revealed that the smallholder irrigation schemes play a vital role in the local economy of the Lake Chilwa Basin and the livelihoods of the farmers on them. The majority of the farmers interviewed were born in the district where the scheme was located – 83% of respondents in the case of Likangala and 84% in the case of Domasi – with most of the others born in a nearby district. Farmers on both schemes had diverse livelihood strategies. In addition to their irrigation scheme plots, 93% reported having upland rainfed fields, 16% had wetland gardens, and 29% had streambank gardens. Further, many plot holders had sources of income in addition to farming: 40% listed casual labor, 19% marketing of crops, 23% owned a small business, and 9% had other occupations. Despite their engagement in other occupations, plots on the irrigation schemes constituted the major source of most respondents' household food supply and cash earnings. When asked to rank which of their fields produced the most food for family consumption, 84% identified irrigation scheme plots, 12% said upland rainfed plots, and the remainder (4%) said streambank or wetland gardens. Seventy-one percent stated that three-quarters or more of their food for household consumption was scheme-generated, 23% said approximately one-half of their food was produced on the scheme, and only 6% reported that less than half came from scheme farming. Most cash earnings also were irrigation scheme-generated. When asked to rank which fields produced the most cash income, 97% said scheme plots. Eighty-five percent reported that three-quarters or more of their income came from the scheme, 12% stated that approximately one-half came from the scheme, and only 3% said that the scheme constituted less than half of their income.

The two irrigation schemes differed in important ways. There were differences in the number of years farmers had held plots, with turnover on Likangala being higher than at Domasi. At Likangala, 63% of respondents had farmed their plots for ten years or less, while at Domasi the figure was 37%. Domasi Scheme had a higher percentage of farmers (44%) who had been on the scheme for twenty years or more as compared to Likangala (17%).

Rice was the major crop grown during the rainy season. It was also the major cash crop grown in the dry season, but more Domasi farmers (60%) said this was the case than Likangala farmers (40%), where a wider range of crops was grown. The poor condition of the Likangala Scheme's main canal may partially explain this difference. In the dry season, many plots, especially those near the end of the main canal, do not receive sufficient water for cultivation. There were seasonal differences as well in the amount of time farmers spent working on scheme plots. While during the dry season 62% spent half or more of their time working on their plots, during the rainy season this figure rose to 87%. Farmers at Domasi spent somewhat more time working on their plots in the dry season than did those at Likangala: at Domasi, 68% reported working half or more of their time on their dry-season plots, while at Likangala the figure was 55%. This lower figure at Likangala can be attributed partially to the dilapidated state of the scheme.

Differences also existed between the two schemes in use of hired labor and in hiring out farmers' own labor. A quarter of the sample worked on other farmers' irrigation plots during the dry season. There were slightly more farmers on Likangala who reported doing this (30%) than at Domasi (21%). In the rainy season, 37% of farmers worked on plots owned by others. Again, slightly more farmers on Likangala (40%) reported engaging in this practice than at Domasi (35%). This suggests that Likangala plot holders were somewhat more likely to sell their own labor than were Domasi farmers. Domasi farmers, in contrast, were more likely to hire labor. There were important differences in hiring casual labor by season and between the schemes. During the dry season, 30% of farmers in the overall sample reported hiring others to work for them, while during the rainy season this rose to 52%, as rice transplanting is labor-intensive. In the dry season at Domasi Scheme, this constituted 40% of the sample, while at Likangala it was only 20%. In the rainy season, 64% of the Domasi farmers and 49% of the Likangala farmers hired workers.

In order to estimate differences in wealth among farmers, a ranking of the households' assets was undertaken, with scores ranging from 7 through 1576. Households were divided into three wealth categories. Over two-thirds fell in the lowest part of the range, 26% in the middle, and 7% in the top asset group. This reflects the distribution of poverty in Malawi and in the Southern Region in particular. A slightly higher percentage of Domasi (36%) than Likangala farmers (28%) had asset scores at the upper end of the distribution. Education also was a resource that was unequally distributed. The average level of schooling on the Domasi scheme was 4.8 years, while it was only 3.6 years among Likangala farmers.

Overall, our findings indicate that the irrigation scheme constituted farmers' major source of livelihood – including food for household consumption and cash earnings. However, the differences presented above suggest that Domasi plot holders were somewhat better off than those on Likangala along a number of dimensions, including number of plots owned, access to labor, and asset holdings. These findings suggest that irrigation scheme farmers are, on average, better off than Malawians who do not have access to dry-season irrigated fields. Many scheme farmers are able to plant twice a year or more and consequently are not as likely to experience food deficits as those without access to dry-season gardens. While they are not among Malawi's poorest farmers, many irrigation plot holders remain vulnerable, as the asset profile reveals. During the January-March 2002 period, the height of the recent famine, the field assistants reported that people on the irrigation schemes were consuming maize husks and grasses. Deaths, aggravated if not entirely caused by hunger, also occurred amongst families.

Tenure status

Under the previous land policy and law, the smallholder irrigation schemes were classified as public land, and they are slated to remain so in the new land policy and legislation. Newly formed farmers' associations will receive a lease for the scheme from government. Our survey and interviews indicated that many farmers, as well as irrigation scheme and government officials, did not know that the WUAs were to receive leases for the schemes. Thirty-seven percent of the farmers thought the scheme would revert to customary land and 27% thought it would become their own private property. Sixteen percent believed that it would remain government land, while 13% said the farmers' association would be the owner.

Uncertainty about the tenure status of the schemes and the plots on them has given rise to a number of misunderstandings. First, the concept of handover suggested to nearly one-fourth of Domasi farmers and a third of Likangala farmers that the land would revert to customary control. At Likangala, this perception has opened the door to ancestral claims, including efforts to limit access to the scheme to farmers from surrounding villages and attempts by TAs to reclaim ancestral lands. Second, farmers who assume that the land will revert to customary tenure rather than being leased from government by farmers' associations are less likely to understand the need to join the WUA or to follow its rules. At Domasi, for example, the majority of plot holders did not understand that the newly established WUA was their membership organization. Instead, they thought it was the new title of the old government-sponsored Scheme Management Committee (SMC). In fact, neither the new Domasi nor Likangala constitutions clearly states that access to plots is dependent on membership in the farmers' association, which appears to be the expectation of government and donors.

Rights of access to plots

Many farmers view the handover of the schemes as reversing patterns that have developed in the last decade. Some plot holders, particularly the wealthier ones, fear that the transfer will remove their opportunities for accumulation as new plot allocation arrangements may be put in place. Others are concerned that it will open the way for more “strangers” to gain access to plots.

One of the most contentious debates relates to who will have rights to access plots after handover. Is it people from surrounding villages, any person from Zomba or Machinga Districts, or any citizen of Malawi? When the schemes were established, the land was converted from the customary to the public tenurial system. Government assumed ownership of the land, and various governance structures were established to allocate plots and carry out other functions. Throughout the Banda era, these irrigation schemes became vital settlement sites for school dropouts and party loyalists. The Malawi Young Pioneers, the paramilitary youth wing of the Malawi Congress Party, played a significant role in training and maintaining discipline. Until the recent adoption of new constitutions at Likangala and Domasi, any citizen of Malawi could technically ask for a plot by applying to the SMCs. In the immediate post-Banda period, absentee farmers and plot seekers from urban areas increasingly began to obtain plots through informal renting and borrowing/lending arrangements and, in some cases, allocation from the SMCs. This influx of “outsiders” might partially explain the higher percentage of farmers on Likangala who had held their plots for ten or fewer years as compared to Domasi. Likangala is closer to Zomba city, and the roads to it are better maintained than those to Domasi.

Dry-season rotation of plots was another way that those who did not normally have access to the schemes gained temporary use. On Likangala and Domasi, the SMCs would reallocate plots each dry season, allowing those who did not normally have plots to use them. Farmers interviewed were generally supportive of this practice: 83% said it should be continued after handover. The reasons that they gave included helping people who did not have enough food, and giving access to those who did not have plots or whose lands did not receive enough water. Although farmers were supportive of this dry-season plot rotation, many criticized the way it was carried out, claiming that the SMC was corrupt and often allocated plots, not to the poor, but to better-off farmers and city dwellers.

As noted above, many farmers and some officials assumed that the schemes were being handed back to TAs or to local farmers. As a consequence, considerable ambiguity now surrounds the issue of who should have rights of access to plots, especially at Likangala Scheme, where this has become a heated issue. There, one village headman has encouraged farmers from his village to take over plots on Blocks B and C from other farmers. He bases his claim to these blocks by saying that these were his ancestral lands and, since the scheme is being turned back to farmers, the plots should be allocated to those from his village. There are also historical reasons for his actions. The village headman and many members of his village were exiled to Mozambique when former President Banda banned the Jehovah’s Witnesses in the early 1970s. When they returned in the early 1990s, they had very little land on which to cultivate and were refused scheme plots (Nkhoma and Mulwafu, 2004). Other village heads have said that if this headman is allowed to claim the scheme land as his village land, they will do the same. We found that several of them had accumulated irrigation plots and were renting them out. This practice resembles the one that has developed in the Lake Chilwa wetlands (Kambewa, 2004; Peters, 2004). One village headman, who claimed sections of the scheme as land for his villagers, specifically said that the reason one of his peers was not doing likewise was because he drew considerable income from the payments he received from the wetland plots he allocated.

The new Likangala constitution, adopted in 2004, states that access to plots is dependent on being from Traditional Authority Mwambo. The Domasi constitution contains a similar, if somewhat more vague, clause asserting that access is limited to citizens of Malawi who are residents of the area. This focus on local ownership reflects some of the historical tensions, described above, concerning displacement from ancestral lands, as well as concerns that plots are being unjustly allocated to outsiders.

Women’s access to plots and voice in management decisions have not been addressed directly in farmer training to date, although the new irrigation policy includes strong statements supporting women’s equal participation in irrigated agriculture. The Domasi and Likangala Schemes are located in an area of matrilineal

inheritance, and many women have plots on the scheme. At Domasi, Concern Universal estimated that of the 1,500 registered plot holders, 47% were women. Asked whether women should be allowed to register plots in their own names, an overwhelming 95% of the respondents at Domasi said that they should, while 88% affirmed the same at Likangala. At Likangala, where the 2004 constitution limits the number of plots a family can hold to four, it is not yet clear what will happen to plots registered in a woman's name when the husband also has plots and the total number exceeds four. The new land policy and law proposes to make inheritance more equitable by not recognizing either customary patrilineal or matrilineal inheritance practices, calling instead for children of both sexes to inherit equally from parents. It is too early to determine what the effects will be on women's land rights, but in a context where patrilineal inheritance is taken as the norm by most policy and decision makers, women in the Southern Region may lose land rights, while those in the Center and North may not gain greater rights.

Landholding size

When the irrigation scheme lands were originally parceled out to farmers in the late 1960s and early 1970s, they received two to four plots, each one constituting 0.25 acre. The baseline survey revealed that the average number of plots held by respondents in 2003 was greater on Domasi than on Likangala Scheme. The Domasi mean was 3.9, while on Likangala it was 2.7. Overall, 18% of the total sample reported farming five plots or more – 8% of Likangala and 17% of Domasi farmers. However, this survey information most likely underestimates the actual degree of plot concentration that exists on the schemes. Accurate information on the number of plots owned or used by farmers was difficult to gather, as no updated list of plot holders and the number of plots registered in their names existed on either scheme at the time of the study. In addition, farmers participating in the survey may not have provided accurate information on landholdings due to the sensitivity of these issues in the current context of change. Ownership of more than four plots and renting or lending plots were widely thought to be against the rules. While the actual degree of land concentration is hard to measure, information gathered through qualitative approaches permitted us to address this issue and to identify the processes involved in plot concentration. This suggests that over the years, and especially during the 1990s, scheme land has become more concentrated in the hands of the better-off farmers, especially those in positions of authority, often through renting and borrowing.

Today it is not unusual for wealthier farmers to own or farm more than four plots, especially during dry-season cultivation. For example, even using the available survey information, 61% of those in the two highest asset classes at Domasi admitted to farming five plots or more, while at Likangala the figure was 29%. Many newly elected members of scheme committees have more than four plots. Some officials on the Domasi WUA Executive Committee own over ten plots, while some of those on the new Likangala SMC own twelve or more plots. Further, these are usually plots with the best access to water. Plot ownership at the household level can be much greater than these figures suggest, as spouses and children often have plots registered in their names as well. In addition, qualitative research revealed that some farmers and scheme officials made use of fake names to gain additional plots.

The new 2004 Likangala constitution states that families (banja) – including the husband, wife, and children – may own no more than four plots in total. It is too early to determine whether committee members farming four or more plots will be willing to enforce these limits. In many cases, however, it is worth noting that the very people who have been given authority to enforce new regulations are the ones known for violating them. At Domasi, on the other hand, the constitution is vague on the issue of the number of plots that can be farmed, stating only that WUA members have a right to “a profitable landholding size according to agreed criteria for land allocation.”

Accurate information on renting and borrowing is equally hard to obtain. Field observations suggested that both are widely practiced on the schemes and further concentrate plot use. For some farmers, the regulation that land not cultivated for two years reverts to the SMC spurs renting as a means to deal with hardships of various kinds. Those who are unable to cultivate their plots because they lack inputs, do not have sufficient labor, or are sick, may rent to better-off farmers and end up working as laborers on their own or others' fields. During the dry season when plots are reallocated, people from town may gain access to them via allocation from the SMC or by renting from other farmers. The 2004 Likangala constitution declares that renting of plots

is illegal and constitutes one of the reasons why a plot holder can be expelled from the scheme. It may be difficult to halt this practice for at least two reasons – its widespread occurrence and the fact that it meets the needs of both wealthy and poor farmers. The Domasi constitution makes no mention of renting or borrowing, perhaps because of these same reasons.

In summary, some farmers have used a variety of mechanisms to gain access to more than four plots, including serving on scheme management bodies or having close connections to those who do, plot ownership by spouses and children, renting and borrowing, and, in some cases, use of falsified names. All of these practices work against broadening access to plots which, as pointed out above, are a premium livelihood resource. While the 2004 Likangala constitution seeks to broaden access to plots by limiting the number a family can own and by barring renting, at this point it remains to be seen if plot redistribution will occur or if the constitution will be amended.

Rehabilitation and capacity building

A critical aspect of rehabilitation of the irrigation schemes is capacity building. Farmer participation in the setting terms of the handover process and training in scheme maintenance and management is an integral part of the rehabilitation process. Our findings indicate that capacity building has not been effective to date. In the case of Domasi, Concern Universal was contracted to train farmers at a time when rehabilitation of the scheme was already at an advanced stage. At Likangala, farmers have been mobilized to supply labor for rehabilitation, but there has been little discussion to date of incorporating capacity building as part of this process.

Rehabilitation of canals, headworks, roads, and other facilities on both schemes has proceeded slowly due to numerous factors. These include delays in funds and supplies, inputs going missing, problems with local contractors, heavy rains that destroyed renovated structures, farmers' reluctance to provide labor, and other complications. Delays have been greatest at Likangala, which depends on government funding for renovations. At Domasi, the targeted date of rehabilitation and handover has changed twice – initially it was scheduled for December 30, 2002, and then for September 30, 2003. By mid-2004, government officials recognized that rehabilitation and handover would not be a single event to be completed by a specified date, but rather a phased process likely to take considerably more time than anticipated.

Many farmers regarded rehabilitation as a government responsibility and were reluctant to take ownership of the scheme until it had been completely refurbished. This suggests that farmers, not only WUA Executive Committee or SMC members, should be involved in rehabilitation decision-making processes from the onset. Since funding is not adequate to fully renovate the schemes, meetings are needed where farmers, together with specialists, identify and prioritize the repairs. Farmers' involvement in decision making, not only labor, can instill a greater sense of responsibility and can help build the skills needed to manage the scheme in the future. When asked, 87% of farmers (92% on Domasi and 81% on Likangala) said they had taken part in the physical rehabilitation of the scheme, but only 41% (52% on Domasi and 29% on Likangala) said they had ever attended a meeting in preparation for rehabilitation and handover. Indeed, many of those at Likangala opposed the transfer, as they were afraid that they would inherit a dilapidated main canal and other structures they could not afford to fix. Many did not see how they could succeed in running the scheme when the government, with all its resources, had failed.

At Domasi, until recently almost all attention focused on training newly elected committees to carry out their functions. Indeed, only 13% of the farmers in the overall sample said they had received some training on handover issues. Twelve of these fifteen farmers were from Domasi and all were members of scheme committees. This indicates that the "Training of the Trainers" model that was used was ineffective, as little training of farmers themselves has taken place. Generally, decisions were made by a small group of committee members and government and scheme officials, and were announced at general WUA meetings. Such concentration of knowledge and authority in the hands of committees means that farmers will be poorly equipped to exercise their rights and obligations in the new governance structures.

Much the same is occurring at Likangala, where a meeting on problem identification and constitution building occurred in early July 2004, involving village headmen and other TAs, scheme committee members, Rural Development Project (RDP) officials, and a small number of farmers. At this meeting, Zomba RDP officials, in effect, imposed a new constitution on those in attendance in the name of "participation" and "consultation."

A week later the constitution was presented for ratification at a general farmers' meeting attended by less than twenty farmers not holding elected or appointed office. Few farmers knew that there was a draft constitution or that a meeting was going to take place to discuss it, let alone the provisions contained in the document itself. At the ratification meeting, the constitution was read to the farmers and they were asked to endorse it. Barely a week later, another meeting was held to elect a new SMC. Top-down actions of this sort are reminiscent of the Banda era and will not result in widespread understanding of or support for new rules and committees.

The study revealed that critical issues related to land and water rights and responsibilities still remain to be clarified. Table 1 indicates that considerable uncertainty prevailed when farmers were asked questions regarding their rights to land once transfer took place.

Table 1. Farmers' knowledge about transfer of the irrigation scheme – rights to plots

Questions	Yes	No	Don't Know
When will transfer of the schemes to farmers' organizations take place?			98%
Will borrowing or lending of plots be allowed after transfer?	33%	56%	11%
Will renting of plots be allowed after transfer?	37%	55%	8%
Will buying and selling of land be allowed after transfer?	8%	84%	8%
Will there be a limit on the number of plots a farmer can have after transfer?	32%	53%	15%
Will dry-season plot rotation continue after transfer?	48%	40%	12%

Source: Ferguson and Mulwafu (2004)

There was also confusion in other critical areas. As noted above, 38% of the total sample believed the schemes would revert to customary land after transfer. While 80% knew the irrigation scheme held a water abstraction permit, there was disagreement over what would happen to it after handover. Fifteen percent thought the government would continue to hold the permit, 18% thought it would belong to the farmers' association, 12% thought that farmers would have to get permits, 26% said the permit holder would be the SMC or the WUA Executive Committee, 7% mentioned TAs, and 22% did not know.

Uncertainty surrounds the issue of plot inheritance as well. Farmers at both schemes have been accustomed to leaving their plots to their spouses, children, and other relatives. The new Domasi constitution says that plots can be left to a specified next of kin who must be identified on the plot holder's WUA membership card. The Executive Committee has the power to approve or reject this choice, as it has the authority to determine if the next of kin meets membership criteria. The implication is that inheritance will be limited to one family member in good standing with the WUA. This clause may generate opposition since it contradicts what has become local inheritance practice. In the opinion of many Likangala farmers, only when the plot holder is unmarried and has no offspring do the plots revert to the SMC for redistribution, and then usually half go to relatives of the deceased and the remainder to non-family members. However, the new Likangala constitution states that upon the death of the holder, the plots are to revert to the SMC, which may redistribute them to the deceased's relatives or to others as they see fit. In the past, the SMC has sometimes used the occasion of a death to obtain plots and reallocate them, often to powerful, influential people – including members of the committee itself. Given these practices, the inheritance clause in the new constitution is likely to generate opposition once it becomes more widely known.

These critical issues concerning land and water rights are as important to address as is the physical rehabilitation of the schemes. While one of the goals of the transfer of the irrigation schemes to farmers is to promote greater "ownership," at this point it appears that farmers' rights to plots are more insecure today than they were in the past. Women's rights to plots are even more precarious since it is unclear in whose names the plots will be registered and who will inherit them.

Authority structures

Although the schemes are government land and TAs are not supposed to be involved in land allocation or dispute settlement on them, over the years, as government has withdrawn from the schemes, they have gained greater voice, especially in solving disputes. The Domasi and Likangala constitutions state that chiefs are not to take part in plot allocation or dispute resolution on the irrigation schemes. However, this appears to be at odds with the new local government law and decentralization policy, which give TAs identified roles in local administration.

Confusion exists especially concerning the roles of TAs in solving disputes that arise between farmers on and off the schemes. When asked who solves such disputes, 57% said the WUA Executive Committee or the SMC, and 38% said chiefs, while 5% didn't know. Because decentralization and many other processes of reform are occurring at the same time, lines of authority are often unclear to farmers and sometimes even to officials. This raises opportunities for multiple interpretations of rights and competing claims to land, water, and other resources.

Although the water, irrigation, and environmental laws are being harmonized at the policy level to resolve areas of ambiguity and conflicting clauses, questions about how the new structures will function on the District or local level in relation to existing rights and practices have been largely overlooked. One of these questions involves the creation of river basin or Catchment Management Authorities (CMAs) as proposed in the new water policy and pending law. Malawi has been divided into seventeen large catchment areas, which are drawn according to hydrological criteria and, in many cases, cross political-administrative boundaries. Two or more Districts may fall within one CMA. While the catchment approach makes environmental sense, it creates another administrative structure that has to be negotiated and financially supported. It is unclear how Catchment Councils will work with District Councils and other political administrative units (Derman et al., 2000). In fact, this has been a significant issue in Zimbabwe, where the same organizational structure was put into place. There, CMAs include representatives of districts, local representatives of various ministries, and major water users such as commercial farmers, smallholders, and mining and urban water user representatives. For district authorities and smallholders alike, the transaction costs of participating in these meetings are high, and they often lack funds to attend. Water users also have to travel long distances to Catchment Authority offices to pay fees or obtain services (Nicol and Mtisi, 2003; Derman et al., 2000; van Koppen et al., 2004). In other words, what makes environmental sense presents administrative challenges. In Malawi, financial problems exist as well, as sustainable sources of funding for the CMAs have yet to be identified.

Discussion and conclusions

Malawi has embarked on what constitutes a radical redefinition of tenure and governance structures related to key land and water resources. These new policies and laws draw on neoliberal development thinking with its emphasis on private-sector initiatives, redefinition and reduction of the role of the state, and promotion of new decentralized, stakeholder-driven, and community-based management institutions. The new irrigation, water, and land reforms embody these characteristics. The study addressed the question of whether these new directions are likely to broaden smallholder irrigation scheme farmers' – especially disadvantaged ones' – access to the critical livelihood resources of land and water. Because these reforms are still underway, our findings are preliminary in nature, but can be used by policy makers and program implementers concerned with monitoring their implementation and possible impacts. Indeed, information at this stage may be of greater practical benefit than such studies at a later date.

Our findings indicate that many critical questions remain to be addressed concerning equity, poverty alleviation, and strategies for pro-poor economic growth in the transfer of the smallholder irrigation schemes from government to farmers' associations. Unresolved issues include the following: Should plots on the schemes be redistributed to assure wider access to them as an equity and poverty-alleviation measure? Should a household's other landholdings, particularly valuable wetland and streambank gardens, be taken into account if reallocation of plots on irrigation schemes were to take place? Should redistribution of scheme plots continue during the dry season as one means to broaden access? Or is pro-poor economic growth best served by permitting greater plot concentration? At this point, it appears that the Domasi WUA Executive Committee and the new Likangala SMC have adopted different positions on equity and poverty-alleviation issues – with the Domasi Executive Committee focusing on productivity and permitting greater concentration of plots and

the Likangala SMC opting for more equitable distribution of them. Our findings indicate that many plot holders on the two schemes are not fully aware of these directions and may not support them.

The study also indicates that a number of forces are at work, both on and off the schemes, which may increase plot concentration. Overall, irrigation plots have grown in value in recent years as a result of various factors. As population growth has given rise to greater land pressure, the value of lands on which two or more crops a year can be grown has escalated. The increasing irregularity in the local climate, characterized by droughts and floods, may also contribute to the importance of scheme and wetland plots. The growing market for rice and off-season vegetables in urban and peri-urban areas has increased the worth of these lands as well. More recently, new agricultural programs, including the promotion of treadle pumps and the Targeted Inputs Program, have made access to these lands more lucrative.

Factors operating on the schemes themselves also may contribute to plot concentration. WUA membership and annual plot fees are presently very low. At Domasi, each farmer is required to pay a MK100 membership fee and a MK50 plot fee per year. At Likangala, the fee is MK150 per plot per year (in July 2004 US\$1.00 was equivalent to MK106). The costs of maintaining the schemes are likely to rise significantly after transfer. In the first place, the draft Water Law states that the irrigation schemes must have water abstraction permits. The cost of the water permit itself may more than triple in price in the near future, an expense likely to be passed on to farmers (Mott MacDonald, 2003). Irrigation schemes may be expected to purchase and install water gauges and other water use monitoring devices. Records of water use will have to be produced yearly at the time water abstraction fees are paid. Second, it is not clear who will pay for future major repairs to canals and headworks on the irrigation schemes – the government or the farmers' associations? Third, personnel may have to be hired to carry out at least some of the responsibilities presently assigned to elected scheme committees and sub-committees, as some of these are nearly full-time tasks and others require specialized knowledge. Membership and other fee collection may be difficult and time consuming. These growing costs will affect farmers differentially. Poorer ones may not be able to cope with them, particularly if the scheme marketing and credit facilities are not substantially improved. In sum, these are enormous adjustments that many farmers we interviewed were not aware of or did not feel ready to undertake, as the refrain "if government failed, how are we to succeed?" indicates.

Another key finding that emerged from the research is the lack of knowledge and understanding among officials and farmers alike about the irrigation, land, and water reforms, due in part to their recent origin. Domasi Irrigation Scheme was last slated for transfer to the Water Users' Association in September 2003. Yet, at that time farmers had no clear understanding of what their rights to land or water resources would be once transfer was accomplished. No common understanding existed among farmers concerning key issues of membership requirements in the WUA; tenure status of the scheme; whether plots could be bought, sold, rented, borrowed, or inherited; and if there would be a limit on the number of plots allowed farmers. At this point, rather than being more secure, farmers' rights to land and water resources are more uncertain than they were in the past.

Women's rights are particularly precarious. As noted above, both irrigation schemes are located in an area of matrilineal inheritance, and many women are plot holders. The new land policy and law state that customary lands are to be registered as "customary estates." While the final details of the implementation of the land policy and legislation are still to be worked out, the current intent is to ignore customary forms of inheritance, whether matrilineal or patrilineal, and to allow landholders to designate their own heirs. Landholders will be able to register land either as individuals or families (conjugal unit) or as larger kin-based groups, but it is unclear whose name/names will be recorded on titles. If farmers have upland, rainy-season fields in addition to irrigation schemes plots, as is the case with most of the Domasi and Likangala smallholders, will the customary estate include both types of property? At Likangala it is not yet clear what will happen to plots registered in a woman's name when the husband also has plots and the number exceeds the total of four permitted for families by the new constitution. At minimum, to avoid women losing the land assets they currently control, registration of family land should require the names of both spouses, and kin-based land should require the names of all siblings.

Features of the new water policy that have implications for the irrigation sector include the need to identify and establish institutions for water planning and conflict resolution at a scale and a cost that is realistic in the Malawian context. No sustainable funding mechanisms have yet been identified for the seventeen large-scale

river basin or catchment authorities proposed in the water policy. Governance structures at a smaller, watershed scale are needed, which would allow for water use planning and resolution of disputes in areas where water competition is intense. In our research area, as the irrigation schemes are renovated and capture more water, competition over this resource may intensify, as surrounding wetland and streambank garden users, estate owners, Lake Chilwa fishermen, birds, and other wildlife all rely on the same water sources. Competition between the irrigation schemes and other upstream and downstream users has already developed, especially along the Likangala River (Mulwafu and Khaila, 2004; Ferguson, 2002). One possibility to explore is to integrate watershed management into the new land management groups proposed in the land policy.

While the water policy and draft law, similar to others in the Southern African region, recognize people's right to water for "primary" purposes, in its present form Malawi's draft law requires those who use water for productive purposes to acquire a water use permit. The high levels of poverty plus the high transaction costs involved in collecting fees from millions of smallholders suggest that other options should be explored. One option to consider is to legally recognize a smallholder right to water for productive as well as domestic purposes. This legal recognition would take into account the importance that water plays in livelihood strategies and would grant smallholders a voice in deliberations over water use without having to register and collect fees from all of them – an impossible task in any case. Registration and collection of water permit and use fees can best be concentrated on large volume water users (ECOM, Water Boards, private estates, etc.).

Finally, consideration should be given to broadening the scope of the new water users' associations. Experiences from elsewhere in the world with irrigation transfer suggest it is most successful on schemes that have relatively small numbers of plot holders with larger plot sizes who depend on the schemes for most of their livelihood and where the costs of scheme management are a small proportion of income. Fewer numbers of better-off farmers are easier to organize and monitor, and they are more likely to be willing and able to shoulder the costs of running the schemes. While Domasi and Likangala farmers do rely on the schemes as their major source of livelihood, few of these other conditions prevail. Thus, even if the ambiguities surrounding farmers' rights and governance structures were resolved and the favoritism and corruption described above were eliminated, many challenges to successful irrigation management transfer would remain.

Shah et al. (2002) have argued that if irrigation management transfer in Africa is to be more than a means of "getting irrigation off the back of governments," it must be part of a broader strategy to remove capital, input, and marketing constraints and to enhance economic returns to smallholder farming. Domasi and Likangala farmers identified low prices and inability to negotiate effectively with buyers as two of their greatest problems. To date, however, the farmers' associations have focused on physical repair and management of the schemes, and have not addressed these broader production and marketing issues. If farmers' organizations addressing these wider production and marketing constraints were formed, it might yet be possible for poor farmers – who still form the majority of scheme plot holders – to significantly improve their livelihoods and for pro-poor economic growth to take place. Such organizations could include not only irrigation scheme farmers but also smallholders from the surrounding wetland areas who face similar constraints.

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Acknowledgments

This research was supported by a grant from the USAID-funded BASIS CRSP project on Institutional Dimensions of Water Policy Reform in Malawi: Addressing Critical Land-Water Intersections in Broadening Access to Key Factors of Production. We would also like to acknowledge the work carried out by the BASIS field assistants over the course of the research project: Mr. Davidson Chimwaza, Mr. Mapopa Nyirongo, Mr. Noel Mbuluma, and Mr. Chancy Mulima. Mr. Chimwaza and Mr. Mbuluma lived and worked on the irrigation schemes, participating in many scheme meetings and in the daily lives of the farmers for three years. Two BASIS-supported graduate students, Mr. Bryson Nkhoma and Mr. Daimon Kambewa, also contributed substantially to the research project.

Contact Addresses

Anne Ferguson, Department of Anthropology, Michigan State University, East Lansing, Michigan, USA
(fergus12@msu.edu)

Wapulumuka Mulwafu, History Department, Chancellor College, University of Malawi, PO Box 280,
Zomba, Malawi (wmulwafu@chanco.unima.mw)