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Entrepreneurs, investors and the state: the public and the private in sub-Saharan African irrigation development

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ABSTRACT

This article draws on ethnographic research in Tanzania to interrogate the discourse of ‘public’ and ‘private’ in sub-Saharan irrigation development. It contrasts the complexity of social and political relations with narratives suggesting that ‘private’ is necessarily opposed and superior to ‘public’. We argue that support for models of private-sector development obscures access to and control over resources and can result in the dispossession of those least able to resist this. Different interests of ‘entrepreneurial’ individuals and corporate investors and the ways in which these relate to the state are also glossed over. Conversely, the failure of the ‘public’ cannot simply be read from the chequered histories of irrigation schemes within which public and private interests intersect in complex ways.

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Introduction

A current renewal of interest in irrigation in sub-Saharan Africa (SSA) combines support for ‘public–private partnerships’ (PPPs) with an increased attention to the activities of small-scale private irrigators, often characterised as ‘entrepreneurs’.¹ At the same time, the ‘public’ is frequently seen as failing. Discussion of the future of irrigation contrasts state-supported schemes with a history of apparent failure and the promise of *both* partnerships between private capital and the state *and* the innovations of individual entrepreneurs. For example, a recent study asks: ‘Given the poor performance of public investments, whether in state or farmer-managed systems, one might ask whether the job of developing and operating irrigation systems is best left to the private sector?’² The idea of a new ‘global irrigation compact’ in which aid finance should no longer be channelled via government agencies has also been suggested³

In this paper, we examine how the public and private are differently constructed in relation to irrigation development, contrasting prevailing discourses with the complexity of social and political relations, empirically illustrated with ethnographic research in Tanzania.⁴ We argue that the effects of current discourse are important: specifically, support to particular models of private-sector development that both obscures access to and control over

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resources, especially land and water, and can also result in dispossession of those least able to resist this. In the process, the differing interests of many types of 'entrepreneurial' individuals and corporate investors (and the ways in which these relate to the state) are obscured. Conversely, we suggest that the failure of the 'public' cannot simply be read from the chequered histories of irrigation schemes within which public and private interests have intersected in complex ways. Such 'public' schemes have been a dominant mode of irrigation development over many decades, have widely been characterised as failures, and are seeing a recent revival.

The distinction between 'public' and 'private' is one of several 'great dichotomies' of Western thought: a binary that subsumes a range of distinctions and renders the complex apparently simpler and more understandable.⁵ When it comes to natural resource management, Sikor et al. have argued that this is a false dichotomy and that a range of institutions has emerged that can be characterised as public-private hybrids which 'are simultaneously public and private – or, to complicate matters are neither public nor private.'⁶ In this paper, we build on this to show just how significant such usages can be – and why it matters. This is because, while neither public nor private is simply descriptive and both are always rooted in ideology, the bases for their attribution can have important implications, both for access to and control over resources, and for the power that shapes this. Specifically, assumptions about the 'public' and 'private' shape strategic policy and investment decisions concerning the types of PPPs that are seen as possible. This is currently reflected in discussions of the 'nexus' of water, food and energy, and the role of policy within this.⁷

An extensive literature examines how the development of policy and its implementation is not a neutral, value-free process.⁸ Instead, it reflects the location of key actors in varying positions of power whose narratives come to shape what is seen as appropriate and legitimate. However, these are not 'free floating'; they reflect 'discourse coalitions' and networks.⁹ Such coalitions give coherence and acceptability to specific narratives and point to the both visible and hidden power of different institutional configurations.¹⁰ In order to appreciate how this takes place, qualitative research that critically analyses how different positions are articulated – and by whom – is important. For irrigation, such insights have informed critical academic analysis by a variety of authors.¹¹ However, they remain remarkably absent from the discourses and approaches of the mainstream institutions that promote irrigation – both donors and national governments.

The next section of this paper examines the linkages between irrigation in SSA and an emphasis on the dynamic power of the private sector. We first outline the ways in which a 'New Green Revolution' in SSA has been linked to irrigation, arguing that there has always been flexibility in how public and private distinctions are articulated within this. We contrast this with an apparent failure of 'public' irrigation, manifested as state support to irrigation schemes. As we note, this has taken place in the context of a much broader ideological shift towards the private sector and against the state in international discourse and policy.

We then turn to our evidence from Tanzania in order to explore this in more detail. Tanzania is a good example of a country considered to have considerable 'latent' potential for irrigated agricultural production, but that has continually struggled to realise this potential.¹² Its agricultural past is one of contestation over the role of the state and the public sector, especially over the issue of access to land.¹³ In addition, a history of colonial and post-colonial donor-supported state irrigation schemes resulted largely in failure.¹⁴ National agricultural and irrigation strategy now emphasises the necessity of large-scale private investment, while formal policy foregrounds the desirability of PPP. As we shall explore, this

emphasis obscures the diversity of public–private relationships that already exist in irrigation practice in Tanzania, and the ways in which these build on a history of complex relationships between the public and the private.

We conclude by stressing not only the ideological nature of attributions of public and private, but also how these reflect broader issues of resource control and politics at different levels and scales. We argue that emphasis on the ‘private’ can end up obscuring the different ways in which both individuals and groups, whether small-scale entrepreneurs or large corporations, gain control over water. It may also divert attention from the fact that much ‘private’ development is still effectively reliant on the state through the subsidies provided via the aid system.

Celebrating the private: the ‘New Green Revolution’ and entrepreneurial innovators

Agricultural growth in SSA is very much on the policy agenda. Indeed, there is a prevailing view that there is a vast untapped potential that can be harnessed with a combination of the right technologies and the right institutions.¹⁵ An important element of this is an increased role for the private sector. Saghir, outlining World Bank efforts in relation to agricultural growth in SSA, argues that there is an abundance of labour, land and untapped water, sufficient for a ‘massive expansion of agricultural production.’¹⁶ This expansion will be driven by the development of ‘modern technologies’, facilitated by a climate of increased private-sector interest in expanding irrigation, more donor commitment, and an improved national policy environment. Initiatives such as the Comprehensive Africa Agriculture Development Programme (CAADP) call for a new African Green Revolution with irrigation development at its centre. Otsuka and Larson similarly suggest that there is considerable scope for transferring the lessons of the Asian Green Revolution to SSA.¹⁷ There have been critiques. For example, Patel has recently argued that these calls for a ‘New Green Revolution’ obfuscate the dynamics of the ‘first’ Green Revolution. Drawing on theorists of class formation and its intersection with knowledge production, he suggests that in the first Green Revolution, the more negative features, such as impoverishment and increased inequality, are occluded, ignored and distorted.¹⁸ However, such critical voices have not substantially influenced the overall direction of policy.

Saghir suggests that the expansion of irrigation will cost some US dollars 40 billion of which one-quarter will come from the World Bank, and the rest from government and public–private investment arrangements. According to Trier of the World Bank, PPP arrangements require substantial investments in infrastructure and technology and investors need assurance of the limitation of risk to their capital in making these investments. He further argues: ‘PPP promotion and development in the irrigation subsector are challenging compared to other sectors as there is oftentimes stronger sociopolitical resistance because of the socio-economics of rural areas and the feeling of public ownership of water services.’¹⁹ Such resistance has been noted in various contexts. For example, Trawick points out that the World Bank’s favouring of privatisation of water has met with strong protest throughout the Andes.²⁰ However, this is generally perceived as a barrier to be overcome, rather than a flaw in the approach itself.

The involvement of large companies in the management of irrigation, especially through schemes that bring together the public and the private through ‘out-grower’ models, is one

important element of the New Green Revolution.²¹ This has included an argument that there is a need to 'secure' property rights, including to water. Thus, the discourse suggests that insecure property rights are an impediment to modernisation, as well as rendering smallholders vulnerable to expropriation. As a recent World Bank-supported study put it: 'even half a century after independence, only 10 per cent of rural land in SSA is registered; the rest is undocumented and thus vulnerable to land grabbing and expropriation without compensation.'²²

The response to this lack of registration is processes of formalisation that may in fact weaken many farmers' claims to water and land,²³ and an extensive literature has emerged to critique such arrangements.²⁴ The commercialisation of water is seen as part of a broader process of 'land grabs', involving extensive investments by the private sector (often multinational companies) in land that is variously described as 'public', 'state owned' or 'customary'. The labelling of the acquisition of large areas of land in SSA as 'land grabs' may obscure the diversity of such deals in terms of the nature of the investor, and the scale and form of investment.²⁵ However, there is a clear shift towards increased corporate control. Importantly, 'securing' land is also seen by donors as crucial for small-scale farmers. But here, the meaning and effects of the 'securing' of land are different to those of corporate acquisitions, though equally potentially problematic for those less able to influence the process.²⁶ The difference between the two contexts is nonetheless obscured by an overarching focus on the inherent merits of the 'private' when it comes to property.

In addition to PPPs in which the 'private sector' is seen as equivalent to large, often foreign, companies, the 'private' is also seen as epitomised by a very different set of actors: independent, entrepreneurial farmers. There is a mounting interest in the potential of 'small, private' irrigation entrepreneurs to contribute to improved livelihoods and poverty alleviation. This analysis frames small-scale irrigating farmers as latent entrepreneurs.²⁷ Here, the private is so in the sense that it reflects the interests and activities of individuals and households that are in some sense beyond and outside the purview of the state. They are 'entrepreneurs' in the ways in which they embrace markets and the search for profit, often in ways that are seen as innovatory and spontaneous. They show an ability to do so without much support, using their own resources, and are often ignored by planners and policymakers.²⁸ As de Fraiture and Giordano put it: 'Simple design, relatively low cost, easy application and high profitability render small private irrigation an alternative to public schemes and an attractive option for smallholders.'²⁹

There are, however, concerns about such entrepreneurialism. Some suggest that the individualisation of irrigation and its unchecked spread pose challenges for the management of water resources, for example because too much water is abstracted and insufficient attention is paid to the relationship between upstream and downstream users. In addition, there may be adverse effects on access to and control over resources as those with weaker access to land and water are excluded in the course of the 'scramble for irrigation'.³⁰ Conflicts also emerge between different users, for example when irrigation practices exclude livestock owners from access to water sources for their animals. Together these concerns can lead both to calls for the greater formalisation of the irrigators' organisation, and to discussion of the need for regulation – usually by the state/public sector.

Public failures and the need for reform

At the same time as the 'private sector' has been portrayed as an important vehicle for a New Green Revolution, including for irrigation, the 'public', equated with 'the state', is seen as simultaneously problematic and yet still also a key player. This position was initially part of the much wider ideological onslaught on the state from the 1980s onwards. It has become more nuanced during the twenty-first century as the complexity behind the simple equation of the state with the public becomes evident. However, a broadly neoliberal distrust of the state as corrupt, inefficient and wasteful remains strong.

There are certainly many well-documented public sector failures. State-supported irrigation has, over many decades and dating back to colonial times, taken place in 'schemes' and it has been widely accepted that many have not survived because of a combination of institutional and governance factors. 'Failure' has meant abandonment of schemes, but also the suggestion that their latent potential has not been met.³¹ State-run irrigation schemes have also been seen as fairly homogeneous communities, despite mounting evidence of processes of social stratification in some schemes.³²

Problems in government-run schemes contributed to policy that encouraged the diminution of the public in favour of a greater role for private actors, including support to farmer-led organisations such as water users' associations (WUAs). Governments in SSA have followed these donor-influenced policy positions, although frequently accompanied by resistance from within state bureaucracies.³³ In recent years, discussion of irrigation reform has therefore focused on the reasons for such resistance, while also engaging with wider concerns about the nature of African governance and apparent failures of the public sector to 'deliver' on expectations. In this, old schemes are being re-launched and revitalised, but now in ways that bring in private capital via the PPPs discussed above.

The widespread emphasis on PPP models, however, suggests that the nature of public involvement in irrigation remains critical. The public sector is seen as shaping the facilitating environment for the nature of private investment in irrigation; it is also seen as having a role in bearing some of the risk for such investments. Just as we have emphasised that private interests in irrigation are diverse and exist at multiple scales, the relationships that can be established with the public sector are also multiple. The nature of government bureaucracy and decision-making, the extent of decentralisation and resource raising powers will all have implications for the nature of PPPs. Equally, those within government may operate as private individuals when it comes to gaining access to resources. Here, the question of whether and how key players are operating as public or private actors becomes particularly pertinent.

In the next section, we turn to our empirical examples to explore the themes discussed above, contrasting a formal, and externally supported, irrigation scheme with farmers whose irrigation practices were construed as private and informal.³⁴ We then reflect on how these sit within broader considerations of the relationship between the public and private in irrigation development in Tanzanian national discourse. The research on which this discussion is based involved ethnographic fieldwork and included participant observation, informal interviews and focus groups. This was supplemented by a quantitative survey of 200 informants. Interviews were also carried out with individuals representing government, international non-governmental organisations (NGOs) and donors at both local and national levels. In Tanzania, 20 such interviews were conducted. The researchers also took part in a workshop with the National Irrigation Commission in Dar-es-Salaam in September 2016.

Reinventing public failure through co-operative private enterprise

There is a tendency across SSA for former state farms to be born again with new donor investment. The Dakawa rice farm near Morogoro is a good example of this. Once a failed state-run farm, originally built with North Korean assistance, the 2000-hectare scheme is now portrayed by its donor, United States Agency for International Development (USAID), as a 'success'. This is partly because of the technical rehabilitation, but also because it is run by a co-operative of almost 1000 small-scale farmers. However, our research suggests that Dakawa is less a collective enterprise than a series of private enterprises. Here, the relationship between public and private is not straightforward, and is used strategically by some individuals to consolidate their access to land while employing labourers. This is in turn partially linked to the access of these individuals to the formal structures of the state.

As we elaborate elsewhere,³⁵ Dakawa has had a complex history. Since its official bankruptcy in 1995, there have been various attempts to use the asset and there is evidence of local political conflicts to take control of the scheme. Reportedly, powerful and wealthy individuals in the Morogoro Region entered into an alliance with the local Village Council to gain access to it. Our interviews suggest that the scheme did not function in the interests of all users at that time. As we were told by one farmer: 'people could ring up from Dar and order that their plots are watered first'. Here, private interests are apparently met through association with the state at its lowest level.

Meanwhile, there is still a significant formal role for the state. One of the major users of the Dakawa Rice Farm is the government-run Chollima Rice Institute, which in turn influenced the creation of UWAWAKUDA, the farmers' collective organisation. The Chairman of the scheme is a government employee and agronomist from the Chollima Rice Institute. UWAWAKUDA is nominally a cooperative society of 'small-scale' farmers with nearly 1000 members, each of whom was only permitted to farm a five-hectare block of land. However, many blocks were farmed collectively, with members within them farming smaller areas. Each of these farmers was also an 'investor' in the scheme as membership is accessed through the purchase of shares. Nonetheless, our interviews suggest that actual control of the scheme does not necessarily lie with the collective, but with larger scale farmers who maintain control over large blocks of land through a practice of registering several blocks in the names of others. One USAID contractor suggested that 'most farmers here are just labourers on other people's land'.

Whilst we might consider all the farmers in Dakawa who hold shares to be 'private investors', they are not a homogeneous group. The village government of Dakawa also has an interest in the scheme, with some individual farmers being members of the Village Council. In this case, then, public interests can also be private and it is difficult to differentiate between the two. Dakawa is perhaps most accurately seen as a type of PPP but one in which the public interests are the local state institutions (Village Council and Chollima Rice Institute) and the private is a range of farmer-investors (at many scales). Meanwhile, these farmer-investors are a highly differentiated group. They range from those who farm a fraction of a five-hectare block to larger scale commercial farmers who are effectively absentee landlords.

Aid also provides a subsidy to Dakawa and it is not clear that the scheme would be able to function without it.³⁶ This results in a complex public-private hybrid with critical investment from outside which demonstrates a reliance on the public in various ways. A long list of bilateral donors has invested in the Dakawa rice farm since its foundation, starting with

North Korea and later including Japan, Australia and Denmark. Current USAID support to Dakawa under the Feed the Future programme has focused on increasing the productivity of rice cultivation, and farmers report production as having doubled or tripled in the course of the project. However, declining rice prices in 2014 left farmers no better off than in previous years.³⁷ The high cost of electricity to run the pumps for the scheme is also critical; accounts suggest that the contributions of members do not cover these costs and that therefore there is doubt about the sustainability of the scheme in the longer term.

Contested interests: private entrepreneurs versus 'the public'

Our second example illustrates how private small-scale irrigation can seem opposed to conceptions of the public interest. Choma, in the Ulurguru mountains, is a small settlement on the slopes above the city of Morogoro. The matrilineal Luguru people have lived in these mountains since the seventeenth century.³⁸ Although this is an area with a long-standing history of irrigation, the ways in which this takes place and the intensity of cultivation have changed dramatically in recent years. Previously, hand-dug furrows were used to move water from the mountain stream to land at the edges of these streams. However, over the last decade the gradual adoption of relatively cheap hosepipes has enabled the use of gravity-fed sprinklers and resulted in the expansion of both the area under irrigation and the number of people involved. Very small-scale farmers are successfully cultivating vegetables and fruit (particularly strawberries) for the local urban markets and reaping significant rewards in terms of their ability to upgrade housing, invest in education and purchase capital goods such as motorbikes. They are not formally organised, but to date have successfully managed access to land and water, with few local conflicts.

The Choma farmers upgraded and improved their irrigation practice without external assistance. The availability of hosepipes has been critical to this but the change was driven through local farmer-led innovation. These farmers are clearly investing, albeit on a small scale. However, this example of successful and entrepreneurial irrigation development is not seen as such by those responsible for governing water supply for the nearby downstream city of Morogoro, the urban municipality and the river basin office. Rather, they are portrayed as being in direct conflict with broader 'public interest'. The Uluguru Mountains are the source of water for both Morogoro and Dar-es-Salaam, and the authorities in Morogoro portray the irrigation practices of the farmers who live there as environmentally destructive and the source of current urban water supply problems. Narratives of destruction combine accounts of farmers degrading their environment over many years with more recent concerns about increased water abstraction because of the growth of sprinkler irrigation.³⁹ In contrast, farmers suggest that they are acting sustainably and merely providing incomes for their families, while the source of water shortages in the town is the growth of building on the lower slopes of the mountains.

But this is about more than narratives. On the one hand, there are pressures to formalise the farmers into a WUA, to be better able to regulate their activity (and tax their extraction). More significantly, there have been attempts by the municipality, resisted to date, to move the farmers off the mountainside altogether. However, this is a complex set of relationships, and there is a contested politics of resource control among the range of interest groups that is involved in these conflicts. There is not a simple battle between the (private) farmers and the (public) state institutions. Instead the case involves a diversity of competing

interpretations of what is and what isn't behind water shortages, and what constitutes the 'public interest'. This involves a limited number of 'facts' and quite a lot of positioning.

The private actors using water from the Ulugurus above Morogoro are not only the small-scale farmers, but also the residential dwellings being built on the lower slopes as Morogoro expands. The public institutions with an interest in the water are not only those supplying water to urban Morogoro, but also the large public universities and Mzingo Army Base which are also heavy water consumers. Mzingo Army Base has its own large-scale irrigated agricultural holding for rice production. Hence, we see a range of public and private interests enmeshed in the political ecology of irrigation practice of the small farmers in Choma.

Public and private in Tanzanian agricultural development

The two cases discussed above illustrate many of the complexities of public and private attributions outlined in the introduction. To make more sense of them, they need to be situated in the broader discourses and challenges shaping the contemporary Tanzanian agricultural state, which has long embodied a tension between aspirations towards a 'modernised' and growing agricultural sector and the apparent difficulty in achieving this. This in turn builds on the complex legacies of *ujamaa* and the villagisation programme of the 1960s and 1970s, which include a continuance of forced resettlement and localised dissent from state control.⁴⁰

Over the last 10 years, there has been impressive economic growth, but not, however, in the agricultural sector. In the period 2005–2012, the Tanzanian economy grew at an average of around 6.9% per year, but this expansion was heavily weighted towards mining, tourism and telecommunications. Agricultural growth was estimated to be only around 4% per year over the same period.⁴¹ Poverty has remained entrenched, particularly in rural areas, and the vast majority of the population still derive most or all of their livelihood from agriculture. These contemporary statistics need to be set in the context of a long history of hope for 'modernisation', development and considerable state intervention.

During colonialism, the German and British administrations invested in plantations of crops such as sisal and groundnuts, with a catastrophic failure in the latter.⁴² As has been well documented, the first independent Tanzanian government (initially supported by the World Bank) then drew on the Chinese experience to develop policies of 'villagisation', including collectivisation and social organisation at the village level. These actions have been variously viewed as disastrous and well intentioned in design but misguided in execution.⁴³ Several large state-led irrigation schemes were constructed through aid from donors such as North Korea to be run by the government as state farms. However, such schemes never operated at full capacity and were mostly bankrupt and abandoned by the state by the mid-1990s.⁴⁴ Greco's analysis of class differentiation and accumulation illustrates the dynamics of private interests in the period following the collapse of large-scale schemes and has several similarities with our observations from Dakawa,⁴⁵ as powerful individuals and interests use their interactions with the state to advance their interests, for example in gaining access to and control of irrigated land.

A vision of agricultural modernisation is also at the foundation of current Tanzanian agricultural policy, just as it was in earlier years. For example, the 1999 *Tanzanian Development Vision 2025* aims to transform the country 'from a low productivity agricultural economy to a semi-industrialised one, led by modernised and highly productive agricultural activities'.⁴⁶

The structural economic transformation that will deliver Tanzania to this vision of the future relies on the transformation of agriculture from peasant subsistence farming to commercialised, export-producing agribusinesses, and a gradual transition to a greater share of economic activity in manufacturing and services.⁴⁷

The 2006 Agricultural Sector Development Programme and *Kilimo Kwanza* (Agriculture First) policy of 2009 emphasise the need to commercialise agricultural production. Commercialisation is assumed to rely on the formalisation of individual property rights as a means to access credit for agricultural investment⁴⁸ It also requires a significant expansion in irrigation. This vision of agricultural transformation is strongly shaped by development partners, notably USAID through Feed the Future, and with The United Kingdom Department for International Development (DFID) and other partners through the Southern Agricultural Growth Corridor (SAGCOT) initiative (2010). Feed the Future prioritises enabling increases in agricultural productivity; SAGCOT emphasises a commercial agribusiness–outgrower configuration. Again, irrigation development is a critical component of both programmes.⁴⁹ A lack of government resources and private-sector involvement is identified as the key reason why this high level of irrigation potential has never been achieved.

The 2010 National Irrigation Policy (NIP) emphasises specific types and forms of management of irrigation. The policy suggests that: ‘Traditional’ irrigation has ‘informal, weak and inefficient irrigators organisations, inadequate skills on operation and maintenance resulting in low water use efficiency...’⁵⁰ The NIP aims to support the improvement of these schemes in both infrastructure and management. This is to be done through private-sector, NGO and faith-based organisation (FBO) participation. All traditional irrigation thus needs to be ‘improved’. Improved traditional irrigation is ‘schemes originally initiated and operated by smallholder farmers that have received interventions by an external agency in the form of construction.’⁵¹ The NIP does not commit to fund such schemes but seeks investment from the private sector and/or ‘progressive’ smallholder farmers.

Meanwhile new schemes with an important role for commercial interests will be important. However, here, smallholders’ interests are not seen as ‘commercial’ and therefore are not private interests. Within the NIP, the category of ‘private and commercial’ does not include smallholder farmers. It initially opens the possibility for ‘demand-driven irrigation scheme identification’ for smallholders but goes on to say (contrary to our evidence from Choma) that: ‘Although farmers may demand development of their irrigation scheme they lack irrigation skills, and therefore, will require substantial training in the overall development, operation and management techniques.’⁵² There is also an emphasis on the fact that farmers need to know how to pay fees for their water use. On the other hand, commercial investors are characterised as needing government support in order to acquire land, water-use permits and finance. Efficiency and management arrangements under commercial providers are not mentioned, other than the need to ensure that ‘water resources are available to commercial schemes.’⁵³ Thus, whereas the private commercial investor is to be encouraged with a facilitating environment, the smallholder is to be educated to pay fees and improve their efficiency.

Following the 2010 NIP, the 2013 National Irrigation Act was created to give legislative push to the aims of the policy. The Act states that of the 29.4 million hectares of land considered suitable for irrigation, only around 500,000 hectares are under irrigation.⁵⁴ Coulson has argued that data on land that is ‘suitable’ for irrigation are often highly unreliable, being based primarily on topographic and hydrological conditions, rather than on current usages

and rules of access to land. Nonetheless, the act allows provision for the acquisition of land by external investors for the purposes of irrigation investment. The National Irrigation Commission (NIC) was established through this act to facilitate the development of 'thousands' of new irrigation schemes.

For the NIC, PPP is the preferred mechanism through which Tanzania can exploit its latent irrigation potential. For example, at a workshop bringing together researchers and the NIC in Dar es Salaam in 2016,⁵⁵ the NIC emphasised the need to accelerate investment in irrigation from public and private funds.⁵⁶ The primary challenge for the NIC is one of how to attract large-scale, foreign investors, and it focuses on providing a suitable facilitating environment for this to occur. This entails the building of infrastructure such as schemes, which are then to be run by the NIC or handed over to operators. In this context, PPPs are conceived of in terms of this primary relationship between state and investor, which excludes possible smaller scale or local investors.

The NIC, however, suffers from a limited capacity to achieve its objectives, and funding is a particular concern. In the 2015/2016 financial year, it received only 9.6% of its requested budget allocation.⁵⁷ This echoes evidence found more widely in the water sector in Tanzania, where a lack of government investment in skills and capacity has led to a shortage of skilled personnel.⁵⁸ The NIC reports that large commercial investors are reluctant to invest due to uncertainties over land ownership, bureaucracy and uncertain returns, and is therefore seeking guidance on how to attract such investors.⁵⁹

The workshop discussions also highlight challenges for irrigation development as a whole. Despite the overarching discourses of unused potential, there is very little information on what water resources are actually available in many places, or on what land is suitable for irrigated agriculture, and little consideration of how to resolve competing demands for water. As one workshop participant commented: 'We do have policies in place but we have no good idea of what water resources we have, and we are using them in a very unregulated way'. In theory, the 2009 Water Resources Management Act sets out a legislative framework for managing competing demands for water. In practice, resource and institutional limitations mean that the act is not implemented.

Discussions with NIC personnel also suggest that there is resistance to the idea that a small-scale farmer can also be an investor, or that they are already actively investing. In this, farmers are characterised as private, but not in the sense of 'entrepreneurs' as favoured in much of the development discourse discussed above: 'These small-scale farmers are citizens (*wananchi*), not investors.'⁶⁰ As our examples above demonstrated, it is, however, the case that private interests operate at multiple scales and levels, and further that there is great diversity in engagement with the public.

Discussion and conclusions

In this paper, we have critiqued the dominant dichotomous view of the public and the private in irrigation development. In particular, we have been critical of the celebration of the 'private' that informs much contemporary discourse and which often diverts attention from the politics of resource control. We argued that an emphasis on both private entrepreneurs *and* public-private partnerships serves to obscure competition over resources and the exercise of power. It also over-simplifies the complexity in the relationships between public and private interests in irrigation, and supports arguments for the securing of private property

rights. When it comes to the 'New Green Revolution', we raised the question of whose interests are met in the 'private sector' that is at its centre.

Our evidence from Tanzania shows that the national body charged with developing irrigation tends to conceive of the 'private' as large, often foreign capital, which will enter into lucrative PPP arrangements. This in turn reflects the particular constraints that it is under, most notably in terms of central funding, in which a requested budget is funded at much less than what is required. For the NIC, the 'private' sector is certainly not the smaller, less-regulated irrigation practices that we found in Choma. This positioning of PPP as a model for attracting large-scale investment then obscures the range of potential relationships between the public and private interests in water. Water resources management more widely has struggled to resolve tensions between economic and social imperatives for water.⁶¹ Formal emphasis on PPP (defined primarily as a relationship between the nation-state and large corporate entity/ies) misses critical aspects of the politics of water scarcity and claims on water resources.

Our two cases from Dakawa and Choma also reveal a more complex situation than a simple equation of the private with big business. In Dakawa, earlier public failure is now being reinvented as private success, as farmers are presented as coming together as entrepreneurial individuals, albeit ones whose activities are couched in collective terms. But in fact, the state is still an important player, not least through its role in the Chollima Research Station, and hence in its management of the scheme. The dependency of the scheme on large quantities of aid also belies its portrayal as a beacon of independent entrepreneurialism. Even within this, the variety of farmers within the scheme (from the genuinely 'small', in terms of asset base and size of landholding, to those who are more accurately investors rather than farmers, and are closely linked to the state and politicians) demonstrates how complex the relationship between public and private really is.

Conversely, in Choma, we found considerable contestation around the activities of the irrigation entrepreneurs on the slopes of the mountains. This contestation was centred on the question of control over resources and the rights and wrongs of regulation. Here, competing narratives – of environmental degradation versus those of unfair directives and unjustified controls – show how politicised the opposition between state and private can be. In both cases, the private irrigation that is to be at the centre of Tanzania's new Green Revolution both is not necessarily equitable in its results and, importantly, cannot be neatly separated from the public. It needs to be regulated, and responsibility for that regulation invariably falls to the state, however poorly equipped it is to do this.

Clearly, these findings support the wider argument that at the root of debates over public and private responsibility for irrigation are fundamental issues concerning control over scarce resources.⁶² These resources include land, but also water, which is of increasing significance.⁶³ In Tanzania, the answer to this from the state has been a formalisation of resource control through the creation of a system of permits and water users' associations that paradoxically both maintain state control and are subverted at the local level.⁶⁴ All of this matters because the effects of such positioning are often felt most strongly by those least able to influence the discourse.

We conclude, therefore, that rather than argue for or against the 'private' or the 'public' as abstract and generally apolitical entities, we need to interrogate the continuum between them and how this is embedded in politics that operate at a range of different scales. We concur with Clement's argument that this necessitates a multi-level approach across

institutional levels, combined with analysis of power.⁶⁵ In the case of a resource such as water, the control of which takes place at local, national and international scales, this is particularly important. Hydrological entities such as watersheds and river basins are not value-free in the ways in which they are delineated and constructed, but focusing on *either* public *or* private can obscure these politics.⁶⁶ Much discussion of the public and private in irrigation development, and the control over water that this entails, remains based in narratives that are more managerial and technical than anything else.⁶⁷ We hope this contribution goes some way towards correcting this tendency.

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Notes

1. Venot, "Success of Some Sort"; Wichelns, "Investing in Small, Private Irrigation."
2. Oates et al., *Pathways for Irrigation Development in Africa*, 59.
3. Lankford et al., "Compact to Revitalise Large-Scale Irrigation Systems."
4. Harrison and Mdee, "Size Isn't Everything"; Harrison and Mdee, "Successful Small Scale Irrigation or Environmental Destruction."
5. Weintraub, "Theory and Politics of the Public/Private Distinction."
6. Sikor, Barlösius, and Scheumann, "Introduction: Public-Private Relations," 1.
7. Allouche, Middleton, and Gyawali, "Technical Veil, Hidden Politics."

8. Mosse, *Cultivating Development: An Ethnography*.
9. Keeley and Scoones, *Understanding Environmental Policy Processes*; Hajer, "Doing Discourse Analysis."
10. Cleaver, *Development through Bricolage*; Ostrom, *Governing the Commons*.
11. Mollinga and Bolding, "Politics of Irrigation Reform"; Mollinga, "Water policy – Water Politics"; Woodhouse, "New Investment, Old Challenges."
12. van Eeden, Mehta, and van Koppen, "Whose Waters?"
13. One illustration of this being the debates over the report of the Shivji Commission on land reform in the 1990s; see Coldham, "Land Tenure Reform in Tanzania."
14. Coulson, *Tanzania: A Political Economy*; van Eeden, Mehta, and van Koppen, "Whose Waters?"
15. Morris, Binswanger-Mikhize, and Byerlee, *Awakening Africa's Sleeping Giant*.
16. Saghir, "Global Challenges in Agriculture," 61.
17. Otsuka and Larson, *An African Green Revolution*.
18. Patel, "Long Green Revolution."
19. Trier, "Review of International Experience," 218.
20. Trawick, "Against the Privatization of Water."
21. Smalley, *Plantations, Contract Farming and Commercial Farming*.
22. Byamugisha, *Agricultural Land Redistribution*, 2.
23. Veldwisch et al., "Smallholder Irrigators, Water Rights and Investments," 128.
24. Bues and Theesfeld, "Water Grabbing and the Role of Power"; Hall, Scoones, and Tsikata, *Africa's Land Rush*; Smaller and Mann, "A Thirst for Distant Lands."
25. Hall, Scoones, and Tsikata, *Africa's Land Rush*.
26. Whitehead and Tsikata, "Policy Discourses on Women's Land Rights."
27. Venot, "Success of Some Sort."
28. Woodhouse et al., "African Farmer-Led Irrigation Development."
29. de Fraiture and Giordano, "Small Private Irrigation," 167.
30. Hanatani and Sato, "Assessing Effectiveness and Sustainability," 62.
31. Suhardiman and Giordano, "Is There an Alternative for Irrigation Reform?"
32. Harrison and Mdee, "Size Isn't Everything"; Harrison and Mdee, "Successful Small Scale Irrigation or Environmental Destruction."
33. Muller, "The 'Nexus' as a Step Back."
34. Further discussion of these cases is published in Harrison and Mdee, "Size Isn't Everything."
35. Harrison and Mdee, "Size Isn't Everything."
36. C. Mdee, "Can Irrigated Rice Production Improve?"
37. Ibid.
38. Ulvila, "Learning with the Villagers."
39. Harrison and Mdee, "Successful Small Scale Irrigation or Environmental Destruction."
40. Greco, "Village Land Politics."
41. Kessy et al., *Translating Growth into Poverty Reduction*.
42. Coulson, *Tanzania: A Political Economy*.
43. Ibid.
44. Chachage and Mbunda, "State of the then NAFCO."
45. Greco, "Landlords in the Making."
46. URT, *Tanzanian Development Vision 2025*, 1.
47. te Velde, Wangwe, and Wiggins, *Shaping Economic Transformation in Tanzania*.
48. Stein et al., "Formal Divide: Customary Rights."
49. van Koppen et al., "Winners and Losers of IWRM in Tanzania," 588.
50. URT, *National Irrigation Policy*, 15–6.
51. Ibid., 16.
52. Ibid., 20.
53. Ibid., 21.
54. URT, *National Irrigation Act*.
55. Workshop on New Directions for Irrigation Development in Tanzania, September 2, 2016, <http://www.ifpri.org/event/new-directions-irrigation-development-tanzania>

56. Makoi, "Overview of Irrigation Policy in Tanzania."
57. Ibid.
58. van Koppen et al., "Winners and Losers of IWRM in Tanzania."
59. Makoi, "Overview of Irrigation Policy in Tanzania."
60. Comment by NIC staff member during workshop September 2016, Dar-es-Salaam; Mdee, "Disaggregating Orders of Scarcity."
61. Muller, "The 'Nexus' as a Step Back."
62. Meinen-Dick and Maganga, "Assessing Models of Public-Private Partnership."
63. Scoones et al., *Narratives of Scarcity*; Woodhouse, "New Investment, Old Challenges."
64. Komakech et al., "Formalization of Water Allocation Systems."
65. Clement, "Analysing Decentralised Natural Resource Governance."
66. Norman, Cook, and Cohen, *Negotiating Water Governance*.
67. Suhardiman and Mollinga, "Correlations, Causes and the Logic", Venot and Clement, "Justice in Development."

Bibliography

- Allouche, Jeremy, Carl Middleton, and Dipak Gyawali. "Technical Veil, Hidden Politics: Interrogating the Power Linkages Behind the Nexus." *Water Alternatives* 8, no. 1 (2015): 610–626.
- Bues, Andrea, and Insa Theesfeld. "Water Grabbing and the Role of Power: Shifting Water Governance in the Light of Agricultural Foreign Direct Investment." *Water Alternatives* 5, no. 2 (2012): 266–283.
- Byamugisha, Frank F. K., ed. *Agricultural Land Redistribution and Land Administration in sub-Saharan Africa: Case Studies of Recent Reforms. Directions in Development*. Washington, DC: World Bank, 2014. doi:10.1596/978-1-4648-0188-4.
- Chachage, Chambi, and Richard Mbunda. *The State of the Then NAFCO, NARCO and Absentee Landlord's Farm/Ranches in Tanzania*. Unpublished Report. Dar es Salaam: Land Rights Research and Resources Institute (LARRI/HAKIARDHI), 2009.
- Cleaver, Frances. *Development through Bricolage: Rethinking Institutions for Natural Resource Management*. London: Routledge, 2012.
- Clement, Floriane. "Analysing Decentralised Natural Resource Governance: Proposition For a 'Politicised' Institutional Analysis and Development Framework." *Policy Sciences*, 43, no. 2 (2010): 129–156.
- Coldham, Simon. "Land Tenure Reform in Tanzania: Legal Problems and Perspectives." *The Journal of Modern African Studies* 33, no. 2 (1995): 227–242.
- Coulson, Andrew. *Tanzania: A Political Economy*. 2nd ed. Oxford: Oxford University Press, 2013.
- de Fraiture, Charlotte, and Meredith Giordano. "Small Private Irrigation: A Thriving but Overlooked Sector." *Agricultural Water Management*, 131 (2014): 167–174.
- Greco, Elisa. "Landlords in the Making: Class Dynamics of the Land Grab in Mbarali, Tanzania." *Review of African Political Economy*, 42, no. 144 (2015): 225–244.
- Greco, Elisa. "Village Land Politics and the Legacy of Ujamaa." *Review of African Political Economy*, 43, no. sup1 (2016): 22–40.
- Hajer, Maarten. "Doing Discourse Analysis: Coalitions, Practices, Meaning." In *Words Matter in Policy and Planning: Discourse Theory and Method in the Social Sciences*, edited by Margo van den Brink, and Tamara Metzke, 65–74. Utrecht: Netherlands Geographical Studies 344, 2006.
- Hall, Ruth, Ian Scoones, and Dzodzi Tsikata. *Africa's Land Rush: Rural Livelihoods and Agrarian Change*. London: James Currey, 2015.
- Hanatani, Atsushi, and Mine Sato. *Assessing Effectiveness and Sustainability of Community Managed Informal Irrigation in Africa: A Comparative Institutional Analysis of "Temporary" Irrigation in Malawi*. JICA-RI Working Paper, no. 34. Tokyo: JICA Research Institute, 2011.
- Harrison, Elizabeth, and Anna Mdee. "Size Isn't Everything: Narratives of Scale and Viability in a Tanzanian Irrigation Scheme." *The Journal of Modern African Studies*, 55, no. 02 (2017): 251–273.
- Harrison, Elizabeth, and Anna Mdee. "Successful Small-Scale Irrigation or Environmental Destruction? The Political Ecology of Competing Claims on Water in the Uluguru Mountains, Tanzania." *Journal of Political Ecology* 24 (2017): 406–424.

- Keeley, James, and Ian Scoones. *Understanding Environmental Policy Processes: Cases from Africa*. London: Earthscan, 2014.
- Kessy, Flora, Oswald Mashindano, Andrew Shepherd, and Lucy Scott, eds. *Translating Growth into Poverty Reduction: Beyond the Numbers*. Dar es Salaam: Mkuki na Nyota Publications, 2013.
- Komakech, Hans, Pieter Van der Zaag, Marloes Mul, Tulinumpoki Mwakalukwa, and Jeltsje Kemerink. "Formalization of Water Allocation Systems and Impacts on Local Practices in the Hingilili Sub-Catchment, Tanzania." *International Journal of River Basin Management* 10, no. 3 (2012): 213–227.
- Lankford, Bruce, Ian Makin, Nathaniel Matthews, Peter McCornick, Andrew Noble, and Tushaar Shah. "A Compact to Revitalise Large-scale Irrigation Systems Using a Leadership-Partnership-Ownership 'Theory of Change.'" *Water Alternatives* 9, no. 1 (2016): 1–32.
- Makoi, Joachim. "Overview of Irrigation Policy in Tanzania: Objectives and Key Questions." Presentation at New Directions for Irrigation Development in Tanzania: The Context of Public Private Partnership, Dar Es Salaam, Tanzania, September 2, 2016. <http://www.slideshare.net/ifpri/overview-of-irrigation-policy-in-tanzania-objectives-and-key-questions-j-makoi>
- Mdee, Anna. "Disaggregating Orders of Water Scarcity – The Politics of Nexus in the Wami-Ruvu River Basin, Tanzania." *Water Alternatives* 10, no. 1 (2017): 100–115.
- Mdee, Chris. "Can Irrigated Rice Production Improve Agricultural Livelihoods in Tanzania?" Unpublished MSc thesis, University of Bradford, 2014.
- Meinzen-Dick, Ruth and Faustin Maganga. "Assessing Models of Public Private Partnership: What Have We Learned?" Presentation at New Directions for Irrigation Development in Tanzania: The Context of Public Private Partnership, Dar Es Salaam, Tanzania, September 2, 2016. <http://www.slideshare.net/ifpri/assessing-models-of-publicprivate-partnership-for-irrigation-development-in-tanzania>
- Mollinga, Peter P. "Water Policy – Water Politics." In *Water Politics and Development Cooperation: Local Power Plays and Global Governance*, edited by Waltina Scheumann, Susanne Neubert, and Martine Kipping, 1–29. Berlin: Springer, 2008.
- Mollinga, Peter P., and Alex Bolding, eds. *The Politics of Irrigation Reform: Contested Policy Formulation and Implementation in Asia, Africa and Latin America*. Aldershot: Ashgate Publishing, 2004.
- Morris, Michael L., Hans P. Binswanger-Mikhize, and Derek Byerlee. *Awakening Africa's Sleeping Giant: Prospects for Commercial Agriculture in the Guinea Savannah Zone and Beyond*. Washington, DC: World Bank Publications, 2009.
- Mosse, D. *Cultivating Development: An Ethnography of Aid Policy and Practice*. London: Pluto Press, 2005.
- Muller, Mike. "The 'Nexus' As a Step Back Towards a More Coherent Water Resource Management Paradigm." *Water Alternatives* 8, no. 1 (2015): 675–694.
- Norman, Emma, Christina Cook, and Alice Cohen, eds. *Negotiating Water Governance: Why the Politics of Scale Matter*. Farnham and Burlington, VT: Ashgate Publishing, 2015.
- Oates, Naomi, Guy Jobbins, Beatrice Mosello, and John Arnold. *Pathways for Irrigation Development in Africa – Insights from Ethiopia, Morocco and Mozambique*. Future Agricultures Consortium Working Paper, no. 119, Brighton, 2015.
- Otsuka, Keijiro, and Donald F. Larson, eds. *An African Green Revolution: Finding Ways to Boost Productivity on Small Farms*. New York, NY: Springer, 2013. doi:10.1007/978-94-007-5760-8
- Patel, Raj. "The Long Green Revolution." *The Journal of Peasant Studies* 40, no. 1 (2013): 1–63.
- Saghir, Jamal. "Global Challenges in Agriculture and the World Bank's Response in Africa." *Food and Energy Security* 3, no. 2 (2014): 61–68.
- Scoones, Ian, Rebecca Smalley, Ruth Hall, and Dzodzi Tsikata. *Narratives of Scarcity: Understanding the "Global Resource Grab"*. Future Agricultures Consortium Working Paper no. 76. Brighton: Future Agricultures Consortium, 2014.
- Sikor, Thomas, Eva Barlösius, and Waltina Scheumann. "Introduction: Public–Private Relations and Key Policy Issues in Natural Resource Governance." In *Public and Private in Natural Resource Governance: A False Dichotomy*, edited by Thomas Sikor, 1–20. London: Earthscan, 2008.
- Smaller, Carin, and Howard Mann. *A Thirst for Distant Lands: Foreign Investment in Agricultural Land and Water*. International Institute for Sustainable Development Program. Winnipeg, Canada: International Institute for Sustainable Development (IISD), 2009.

- Smalley, Rebecca. *Plantations, Contract Farming and Commercial Farming Areas in Africa: A Comparative Review. Land and Agricultural Commercialization in Africa. Future Agricultures Consortium Working Paper no. 55*. Brighton: Future Agricultures Consortium, 2013.
- Stein, Howard, Faustin P. Maganga, Rie Odgaard, Kelly Askew, and Sam Cunningham. "The Formal Divide: Customary Rights and the Allocation of Credit to Agriculture in Tanzania." *The Journal of Development Studies* 52, no. 9 (2016): 1306–1319.
- Suhardiman, Diana, and Mark Giordano. "Is There an Alternative for Irrigation Reform?" *World Development*, 57 (2014): 91–100.
- Suhardiman, Diana, and Peter P. Mollinga. "Correlations, Causes and the Logic of Obscuration: Donor Shaping of Dominant Narratives in Indonesia's Irrigation Development." *Journal of Development Studies* 48, no. 7 (2012): 923–938. doi:10.1080/00220388.2011.638052.
- te Velde, Dirk Willem, Sam Wangwe, and Steve Wiggins, eds. *Shaping Economic Transformation in Tanzania. Growth Research Programme*. London: Overseas Development Institute, 2015.
- Trawick, Paul. "Against the Privatization of Water: An Indigenous Model for Improving Existing Laws and Successfully Governing the Commons." *World Development*, 31, no. 6 (2003): 977–996.
- Trier, Rémi. "Review of International Experience With Public–Private Partnership in the Irrigation Subsector." *Irrigation and Drainage* 63, no. 2 (2014): 212–220.
- Ulvila, Marko. "Learning with the Villagers: An Account of Participatory Research in the Uluguru Mountains, Tanzania." Unpublished MA thesis, University of Tampere, 1995.
- United Republic of Tanzania (URT). *Tanzanian Development Vision 2025*. Dar-es-Salaam: United Republic of Tanzania, 1999.
- United Republic of Tanzania (URT). *National Irrigation Policy*. Dar-es-Salaam: United Republic of Tanzania, 2010.
- United Republic of Tanzania (URT). *National Irrigation Act*. Dar-es-Salaam: United Republic of Tanzania, 2013.
- Van Eeden, Aurelia Lyla Mehta, and Barbara van Koppen. "Whose Waters? Large-Scale Agricultural Development and Water Grabbing in the Wami-Ruvu River Basin, Tanzania." *Water Alternatives*, 9, no. 3 (2016): 608–626.
- van, Koppen, Barbara Andrew, Tarimo, Emmanuel, Manzungu Aurelia van Eeden, and Philip Sumuni. "Winners and Losers of IWRM in Tanzania." *Water Alternatives*, 9, no. 3 (2016): 588–607.
- Veldwisch, Gert Jan. "Wouter Beekman, and Alex Bolding. "Smallholder Irrigators, Water Rights and Investments in Agriculture: Three Cases from Rural Mozambique." *Water Alternatives* 6, no. 1 (2013): 125–141.
- Venot, Jean-Philippe. "A Success of Some Sort: Social Enterprises and Drip Irrigation in the Developing World." *World Development* 79 (2016): 69–81.
- Venot, Jean-Philippe, and Floriane Clement. "Justice in Development? An Analysis of Water Interventions in the Rural South." *Natural Resources Forum* 37, no. 1 (2013): 19–30.
- Weintraub, Jeff. "The Theory and Politics of the Public/Private Distinction." In *Public and Private in Thought and Practice: Perspectives on a Grand Dichotomy*, edited by Jeff Weintraub and Krishan Kumar, 1–42. Chicago, IL: University of Chicago Press, 1997.
- Whitehead, Ann, and Dzodzi Tsikata. "Policy Discourses on Women's Land Rights in Sub-Saharan Africa: The Implications of the Return to the Customary." *Journal of Agrarian Change* 3, no. 1-2 (2003): 67–112.
- Wichelns, Dennis. "Investing in Small, Private Irrigation to Increase Production and Enhance Livelihoods." *Agricultural Water Management* 131 (2014): 163–166.
- Woodhouse, Philip. "New Investment, Old Challenges. Land Deals and the Water Constraint in African Agriculture." *The Journal of Peasant Studies* 39, no. 3-4 (2012): 777–794.
- Woodhouse, Philip, Gert Jan Veldwisch, Jean-Philippe Venot, Dan Brockington, Hans Komakech, and Ângela Manjichi. "African Farmer-led Irrigation Development: Re-Framing Agricultural Policy and Investment." *The Journal of Peasant Studies*, 44, no. 1 (2017): 213–233.