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Richard R. Marcus

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Richard R. Marcus, Ph.D.
Department of Political Science
The University of Alabama in Huntsville
(256) 824-2312
marcusr@uah.edu

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In one of nature's great ironies, we live on a planet two-thirds covered by water, but only about three percent of that water can be used for human consumption. Until the 1990s water was commonly considered an issue for natural scientists, hydrologists, and engineers. Social science inquiry existed only at the margins of exploration of a resource that was largely taken for granted. Today, however, decades of river diversion, unsustainable aquifer use, and tapping of non-renewable, often fossil, water sources, combined with ever-increasing pollution of both surface and groundwater sources, have led a cacophony of voices to point to looming water disaster. The challenge for the new millennium is how to meet diverse domestic, industrial, agricultural, and environmental water needs without overexploiting the resource. To meet this challenge many countries have begun moving towards Integrated Water Resource Management. In nearly all cases this means that the role of the national government is diminishing in favor of water resource management at the river basin or local (community) level. This sort of decentralization is a particular form of democratic devolution intended to empower the local population to improve accountability, civic engagement, and equity. After all, who is more likely to make decisions in favor of their own water needs than the end users themselves? It is an innately participatory action that is consistent with the deepening of democratic norms and offers tremendous potential to eschew limited and failed statist systems in favor of adaptive governance that can place management responsibilities at diverse levels where they will be most efficient. In practice, however, the challenge is much greater than simply transferring authority and decision-making to autonomous sub-national units. The decentralization of management to local levels, and deconcentration of management to regional governance levels controlled by the central government, require integrating management across scales in one governance system. There can be temporal, spatial, and institutional problems that arise (Lovell et al. 2002). Within institutional challenges, raised in this paper, there can be inefficiencies within the authority transfers, insufficient local political and legal frameworks, an unwillingness of community participants to participate in community based resource management structures, and a significant fiscal gap.

This paper draws on a study by the author of two agro-pastoral regions struggling to meet their water needs in semi-arid environments: Tana River District (Kenya) and Ambovombe District (Madagascar). The paper will explore the institutional changes that have taken place with particular emphasis on the disengaging state, the lack of fiscal and administrative support throughout the decentralization processes, the community responses including local elite capture of certain local processes, and the subsequent rise of predatory (informal) private markets at the community level.

Through these two cases an interesting conundrum emerges about how to view the water sector. At least since the Earth Summit in Rio and the Second Conference on Water in Dublin, both in 1992, it has become a standard to disaggregate water by end-use type: agricultural and pastoral water, industrial water, maritime water, domestic water, and, more recently, environmental water. This makes sense as water management demands differ by sector, water pricing often differs by sector, and water priorities often differ by sector. Both the Malagasy Water Code of 1998 and the Kenya Water Act of 2002 focus

predominantly on domestic water use even though they rely on agricultural economies and agriculture consumers more than 70 percent of the resource. This is due to efforts focusing on reducing water poverty, a major indicator later adopted in the Millennium Development Goals of both countries. It is clear in the subsistence economies of Ambovombe-Androy and Tana River District, however, that agro-pastoral perceptions are that this is a false distinction. Where water is for irrigation systems it is possible to make a clear distinction between production water and domestic water. However, less than 5 percent of agriculture in each of these countries is irrigated, the remainder rely on modest channeling as possible, flooding, and rainfall. The source for the agricultural water is inevitably the same as the domestic water. From a local perspective, when farming or herding is the way of life why seek out a supply for your family separate from your livelihood? Even if the water comes from a bucket for domestic consumption, when it becomes too dirty to drink you give it to your livestock. There is a conceptual and mechanistic hurdle to the end-use distinction. Alleviating this would require the development of parallel water sources or, at minimum, parallel water pricing from regularized sources. In neither case does this exist (outside of the limited example of the two state-governed irrigation schemes in Tana River District). Since this paper focuses on local responses to state water changes it blurs the end-use distinction in favor of the single-source considerations of the local populations. There are two exceptions in this study: Ethnic Pokomo communities in Tana River District sometimes have water pumps for domestic consumption (only) and in this paper pumps are eschewed in favor of irrigation challenges; in Ambovombe-Androy District cattle can survive for some parts of the year on *raketa* (prickly pear cactus fruit). This is left out of the discussion in favor of the challenge of water sources.

The project this paper is based on has sought to compare challenges that have emerged between decentralizing state entities for water resource management and the perceptions and capacities of communities with new found responsibilities. Democratic decentralization is intended to increase efficacy, improve the distribution of the resource, and deepen democracy by providing new avenues of popular participation. Yet, legal and juridical frameworks, agent empowerment, history of conflict, market efficacy, stakeholder diversity, stakeholder goals, and economic inequality drive an imbalance of opportunities between stakeholders. It appears that under some conditions the process of decentralization serves as a structural constraint to the intended participatory outcomes. As a result, would-be “participants” in participatory water systems are marginalized, community-based participation in water-use decision-making is not possible, multilevel governance is highly constrained, and the resource management regime risks collapse.

The field research for this study included focus groups and interviews conducted in Kenya and Madagascar in 2002, 2003, and 2004; in the case of Ambovombe-Androy, Madagascar a rural perceptions survey was also conducted 2005. While the 1990s were replete with studies on community based natural resource management (CBNRM), few CBNRM studies were empirically based and even fewer attempted to take a longer term view to assess the challenges and pitfalls of placing increased responsibilities at the local community level without further thought to the transferability (or lack therein) of institutional designs, the transfer of capacity, or the nature of community. By comparing cases that can shed light on the politics of institutional choice and the politics of recognition in natural resource management decentralizations, this study hopes to uncover important challenges to positive institutional outcomes in the process of democratic decentralization while using a finer optic to look at state-local relations in water resource governance.

Institutional Changes in Kenya and Madagascar

Kenya has a long history of linking water management to state-driven development goals. This has generally meant the construction of large water facilities (dams, pipelines, etc.) to the benefit of select populations in large cities and to the hydroelectric power industry. In 1986 the government began to reassess its position, considering the value of decentralized management and soft mechanisms,

particularly pricing. These culminated into Sessional Paper No.1 of 1999 and the Water Act of 2002 which served to de-link water from development for the first time while moving towards a basin-level approach. In contrast, while the Malagasy state held on to legal water rights at independence it did not link water to development and was not active in the sector. Water rights became de facto riparian rights with limited infrastructure outside of modest urban facilities managed by the state water company, JIRAMA. The (Water) Sector Strategy and Action Plan SSPA of 1995 and the Water Code of 1998 was based on the principles that water must universal, well-managed, and commodified. While the state clarified its rights to govern water, it simultaneously moved most management responsibilities to the local level. Thus despite markedly different institutional histories, Kenya and Madagascar have arrived at comparable destinations.

Kenya's water provision is based on its Water Plan at independence in 1963. This provision made water a public good and gave all water rights to the Kenyan state. This is an important doctrinal move. In contrast to English common law or riparian rights which give water rights to those landholders who are next to the river, Kenyan water law allowed for prior appropriation. Instead of the right to access water vesting in land rights, the right to access water is held by the state and a landowner must request a legal right to the resource. This popular design has been made famous in other places such as Rajasthan India, the Negev Israel, and California USA where the state has used its control over the management of water to implement large irrigation schemes. Kenya never had the finances or the will to venture down such a large scale irrigation path and the irrigation schemes it did attempt -- including Bura and Hola in Tana River District -- have failed. However, many of its answers to water woes suffered the same weaknesses. Kenya sought to build its way out of poverty through the regional construction and operation of dams, tunnels and pipelines, and the local construction of systems of weirs, pump stations and irrigation canals -- what Peter Gleick (2003) has called water's "hard path."

The reason for this path is that at independence in 1963 Kenya's primary goal was nation-building. It shortly thereafter launched "Sessional Paper No.10 1965 on African Socialism and its Application to Planning in Kenya." This paper directed Government Policy towards priority development concerns, specifically poverty, illiteracy and diseases. The policy broadly meant that major basic services were going to be expanded and provided free or subsidized by the Government. In the water sector this culminated in the National Master Water Plan of 1974. Kenya's Third Development Plan for 1974-1978 furthered this direction by articulating the need to manage resources for ecological, socio-cultural and economic benefits. The importance of institutional development was introduced for the first time, but the hard path emphasis was accentuated by a "big push" towards obtaining foreign funding for new engineering projects. It was not until the Kenya Development Plan for 1979-83 that the government introduced a costing mechanism. "Commercialization of Water and Sanitation" facilities in Kenya was first featured in Sessional Paper Number 1 of 1986 on "Economic Management for Renewed Growth." This paper was the first time the government suggested the decentralization of the water provision facilities by the operations to Local authorities, which had the necessary administrative and technical capacity. The Local authorities through the Ministry of Local Authority were then urged to revise the pricing of the utilities and services (i.e. health and water services) to reflect not only the real cost of operation and maintenance, but long term capital stock replacement. This was something relatively new. Farmers within irrigation schemes, such as the seven set up by the National Irrigation Board, were accustomed to paying for water but it rarely reflected the real cost. Riparian and small-scale irrigators generally had been free from associated costs. Thus reevaluating water pricing was a critical move towards improved water resource management even if it fell far short of addressing broader concerns of institutional design, institutional efficacy, and power distribution. As a result of the decades of poor state decision-making in the context of the hard path, the country's freshwater availability reduced from 1853 cm per capita in 1969 to 612 cm per capita in 2004 (Ministry of Water and Irrigation 2005).

Kenya's National Water Action Plan of 1992 continued on the hard path, focusing on primarily technical issues and ignoring the governance and management issues that had already become apparent. Yet, following trends in international water governance (United Nations World Meteorological Association 1992), new water policies were slowly enacted in Kenya in order to decentralize the decision-

making process and integrate water resource management across all levels. Most critical was the Sessional Paper No.1 of 1999, “National Policy on Water Resources Management and Development” which mandated the decentralization of the water sector and the subsequent management of the resource across scales. Kenya began shifting towards the so-called “soft-path” of water governance (Gleick 2003). This process has placed Kenya’s water resource policies in a state of flux. The 2002 Water Act, which followed, created a river basin management system with nine new institutional types created to integrate water resource governance across levels. These include:

1. The Water Resources Management Authority (WRMA), which has the responsibility to manage, protect and conserve national water resources;
2. Six WRMA Catchment Offices, to give the Authority a presence in different regions of the country, facilitating the policy of decentralized water resource management;
3. Six Catchment Area Advisory Committees to advise on water conservation, use and allocation;
4. A number of Water Resources Users Associations to make possible community participation in the management and development of water resources;
5. The Water Services Regulatory Board (WRSB);
6. Seven Water Services Boards (WSBs) licensed by the WRSB to be responsible for the efficient and economical provision of water services;
7. Water Service Providers (WSPs) operating under Service Provision Agreements (SPAs);
8. The Water Services Trust Fund (WSTF) to finance the extension of water services to poor communities;
9. The Water Appeals Board (WAB), an independent body established to resolve disputes between holders of water rights and any other dispute arising within the water sector which cannot be resolved at a lower level.

The purpose is to move the nexus of decision-making to the community level. Water ownership is still held by the state (not riparian interests), but communities determine what their water needs are and then petition the WRMA, through the catchments offices, to assist with the infrastructure development to meet those needs. WSPs, either public or private, act under SPAs to deliver these services while the WRSB ensures that the regulations set by the state to protect the resources are maintained. These institutions only came into effect on July 1, 2005 so it is too soon to measure their success. Yet the changes are a model of the most recent global conventional wisdom on effective water governance (UNDP 2004, World Bank 2004, Gleick 2004, International Network of Basin Organizations 2003, Third World Water Forum 2003) and hold tremendous potential for the improved governance, and management, of Kenya’s increasingly scant water resources.

In contrast to Kenya, Madagascar did not set out a national policy for the water sector at independence in 1960. The government’s first foray into national level water resource governance came in 1974 in a Decree from the Military Directorate headed by General Gabriel Ramanantsoa. This decree used only the broadest of strokes. It included gradually extending water infrastructure to the whole country in a measure consistent with economic and social development priorities, to identify the best means to make water available to the country, and to standardize water operations across the country. It did, however, also commodify water, stipulating that water tariffs must cover water expenses. It also eschewed Kenya’s statist approach by empowering municipalities to impose taxes for water consumption. In short, Madagascar’s water sector was not linked to its broader development objectives. The government did not assert a state right over water or to seek prior apportionment. It also didn’t specify riparian rights. It was, predominantly, absent. For its scattered few development projects that required engagement with the water sector, such as hydroelectric development, the state asserted a right as necessary. The 1974 Decree did not fundamentally alter the mode of water sector development. To the extent that it existed, it was carried out by the government-owned corporation, the *Société Malagasy des Eaux et Electricité (SMEE)*. In October 1975 the SMEE merged with the *Société des Energies de*

Madagascar (SEM) to form *Jiro sy Rano Malagasy* (JIRAMA). JIRAMA is to this day the only national level water service provider.

Whereas Kenya failed at its development goals of providing water to its majority rural poor, Madagascar didn't address it. Its first efforts to redress the sector came well after international norms had begun converging on soft path solutions. In May 1995, the Government approved the (Water) Sector Strategy and Action Plan (SSPA). The goal was to define the operational objectives in the water and sanitation sector. Specifically, it established an objective of increasing the connection rate, then 29 percent of the country, to 79 percent by the year 2010. It planned on doing this by strengthening local participation in the social and economic development process. Specifically, it mandated the optimization of water management in rural and poor areas alike by placing a greater responsibility on municipal and rural local providers. The strategy relied on seven basic principles:

- 1) institutional development through the increased responsibility of actors
- 2) stronger private participation in water withdrawal
- 3) decentralization
- 4) community participation and social mobilization
- 5) training and professionalization
- 6) water resource and environmental protection
- 7) information sharing and health education throughout the country

The state level entity with ultimate responsibility for water delivery is the Ministry of Energy and Mines. It must coordinate with the relatively new Ministry of Water and Forest responsible for surface water management and the Ministry of Health responsible for assuring potable water. The Ministry of Energy and Mines is organized into four relevant departments: The most critical herein are the Department of Water Exploitation and the *Alimentation en Eau dans le Sud* (AES) which operates exclusively in the south of the country. The AES was created by presidential décret 86-241 in August 1986 with the idea of organizing statutes for water management in the south. It has undertaken two projects, both funded by Japan International Cooperation Agency (JICA). The first project was a water pipeline from the Menanadra River near Beloha to the mining rich Tsihombe District. The second project was a system of water truck delivery from the Mandrare River (in Amboasary District) to Ambovombe-Androy District. The AES is the only public water supply interest in the region with the exception of scattered urban and semi-urban JIRAMA holdings.

Reforms in Madagascar's water sector took place concurrent with its decentralization plans. Madagascar began its national decentralization process in 1994 (Lois 94-001 à 94-008). Shortly thereafter (Loi 95-005) the legal framework for budget transfers began being formulated. In November 1995 the citizenry elected 1347 rural mayors and 45 urban mayors to fill the leadership roles of the newly created *communes* (the second to lowest level of governance). Then, in April 1998, a constitutional amendment championed by then President Didier Ratsiraka created a "regional unitary" state with "autonomous provinces" governing the decentralized collectivities.

In 1998 Madagascar wrote its first Water Code. The Code's primary point is that water should be universal, well-managed, and commodified. It states that water is necessarily in the public domain (and thus the state reserves the right to abrogate riparian rights), but must be managed and conserved by assessing a value. The management, distribution, organization, and financing can be public or private, but it must include a cost recovery mechanism and must involve local participation. In urban areas this effectively meant that JIRAMA would be privatized. Despite significant moves towards privatization since 1999 it remains a government-owned company. It services predominantly urban areas and, since 2003, has experienced significant fiscal crisis that has marred its ability to provide water or electric service without frequent and significant interruption. Some urban areas are seeing their water sectors revamped by public-private partnerships. Conflicts over urban water resources, such as that surrounding Antarambivy, a primary source for the regional city of Fianarantsoa, are being addressed with varying

levels of success. What of the other 77 percent of the population that lives in rural areas? This issue is less clear. Policies are limited in scope where they exist at all.

The decentralization inherent in the Water Code meant that from 1998 to 2004 *communes* (second to lowest administrative level) assumed primary responsibility for water decision-making including management and fee collection. In September 2004 President Marc Ravalomanana shifted the decentralization plan to focus on 22 “Regions” (*prefect*) as the primary level responsible for development planning. However, it did not shift the focus of Madagascar’s water sector which is still intended to follow a decentralized, cost recovery-oriented path. *Communes* retained the responsibility of maintaining horizontal control on spending decisions and accounting practices. They are responsible for the management of infrastructure delivery systems including water. They are also responsible for engaging local populations in the planning and monitoring of local development plans.

Lack of Support and the Fiscal Gap

If Kenya and Madagascar can be said to have arrived at the comparable institutional arrangements, managing water resources across scales, it can also be said that the challenges they face are comparable. Water reforms are costly. High levels of poverty in rural areas in particular leads to a question about how to finance them. Kenya has a limited history of fiscal transfers, relying instead on local income generation. Madagascar has a highly centralized economy and has long recognized the need for fiscal transfers but little history of doing so in large percentages. In both cases there is limited capacity developed at the local level to manage water resources or even participate in resource decision-making, even if, in Kenya at least, the responsibilities of local participants and the institutional chain of communication is legally clear. In both cases the plan is for the private sector to play a significant role in financing water sector renewal but the mechanisms have not been clearly articulated and the environment has not been made attractive to investment. Thus both countries are assuming tremendous risks by disengaging primary state functions without a clear indication of how the resource will be managed in practice or who will pay for it.

Kenya

Kenya has not had a national decentralization strategy until recently. Fiscal transfers, outside of school teacher funding and occasional strategic assistance for severe poverty, have been extremely limited. Local governments have relied almost entirely on property taxes, payroll taxes, and business taxes. With an increasing national tax base (owing to a political environment more friendly to foreign business), this is changing. The Ministry of Local Government has begun working on institutional capacity reforms intended to more effectively manage their revenues through citizen participation. One of the key mechanisms established, in 2000, is the Local Authority Transfer Fund (LATF). The goal of the LATF is to rationalize the financial relationship between central and local governments by providing local authorities an incentive to improve service delivery and financial management. The LATF transfers 5 percent of revenues to local authorities (Oyugi 2005, DFID 2002). For many rural local authorities this is a significant fiscal infusion despite the relatively low transfer rate. There has not, however, been a sufficient benefit to the decentralized water institutions. The LATF transfers go to the local authorities. Local authorities collect service fees for water provisions but they are not responsible for funding water source development, maintenance, or delivery. Funding for water projects under the new system go through the WRMA or the WSTF. They have a parallel, deconcentrated governance structure from the state to sub-basin level. In order for benefits to be felt in the water sector from fiscal transfers funds must be transferred from the WRMA or WSTF central offices down to the basins, through the District Water Office into the hands of community groups.

As part of the National Water Services Strategy the Ministry of Water and Irrigation recognizes that there is an economic challenge at hand. The ten-year goal is to increase urban supply coverage from 68 percent to 84 percent and rural water supply coverage from 49 percent to 74 percent. In the rural sector this includes the modest goal of connecting 15 percent of rural homes to water supply while raising rural sewerage from 2.4 percent to 8.7 percent of the population. It estimates that it will need to invest

235 bill KSH (\$3.3 bill) between 2005 and 2015. In rural areas the lion's share of the need, 96 bill KSH (\$1.4 bill), is the development of infrastructure for water supply. In order to meet this goal, the government has set out an investment program that includes the commercialization of water services provisions (to improve user fee collection), promote private sector participation in urban areas, promote syndicates in small town and large scale rural areas, promote private sector participation in small rural piped schemes operated by communities, establish micro-credit programs for community provider development, and increase billing efficiency while raising tariffs (Ministry of Water and Irrigation 2004). There is great potential for this strategy. However, in Kenya's plan there are a couple sticking points that must be resolved if this effort is to succeed.

First, neither the environment nor the incentives appear to be in place on pace with the move towards reform. As pointed out by Price Waterhouse Cooper (2005), for private sector provider (PSP) schemes to work the infrastructure must be viable, there must be uniform political will, there must be a legal, institutional and regulatory framework conducive to PSPs, there must be government implementation capacity, and Kenya's image needs to be revamped to appear attractive.

Second, Kenya's move towards water commodification needs to be married to rural realities. Water is a social good and as such should be free. Yet, as famously noted by former IMF Managing Director Michael Camdessus, while the water can be free someone needs to pay for the pipes. Panels at the Third World Water Forum (in 2003) made clear that while the privatization of public water companies in poor countries has a spotty record at best, there are success stories of public-private partnerships where the private sector collects, treats, and delivers water to customers with improved efficiency in urban (Senegal, Mali) areas. Yet, even proponents of an increased role for private enterprise in the water sector have come to argue that in poor countries there must first be significant public investment (Winpenny 2003) and even with that there are other structural factors that lead to a spotty record (Moore and Urquhart 2004). Kenya has a dodgy history with private sector water reform. There have been successful management contracts in Malindi, Nyali, and Karen, but challenges have wrought attempts in Nairobi, Narok, Trans Mara, Samburu, Nyeri, Eldoret and elsewhere; in one case, Nakuru, there was even a costly reversal of a public-private partnership contract (Onjala 2002). Water has been an unconvincing investment in Kenya's urban sector, so it is certainly, as of yet, unconvincing in the rural sector.

Third, not present in Kenya's formulation are significant fiscal transfers. Local funds and investment will be a requisite part of the funding schema. Yet rural areas account for 51 percent of the assessed need. There is an urban-rural divide of over 30 percent in Kenya (Sahn and Stifel 2002). While lower than Madagascar's 45 percent it is still significant. Incomes in Nairobi average 72,446 KSH (\$1,018), nearly four times that of a rural area such as Tana River District with income averaging 18,684 KSH (\$262). The UNDP's Human Poverty Index follows a similar pattern with a score of 25.9 for Nairobi and 49.2 for Tana River District (UNDP 2005a). If we consider that Tana River District has a population of approximately 215,000 (Republic of Kenya 2001) then we can estimate total revenue for the district to be approximately \$56 mill. This is sufficient to assume end-users will pay for water delivery per unit but it is not a sufficient base from which to extract enough funds for significant infrastructure investment. A problem considering "the existing water facilities in the district are not enough to adequately provide for domestic, livestock and industrial use and therefore need to be augmented" (Tana River District Development Plan (2001: 43).

Finally, the urban-rural divide aggravates the development of rural water supply when the sectoral equalization measure is removed. There are two such mechanisms: the state can transfer resources to the rural areas to fund local initiatives for water resource development or it can invest the capital raised in urban areas into rural areas through state projects. The new water strategy does neither of these things. Thus whereas Kenya finally appears to be getting its sectoral management plan in order, it appears to have undermined the necessary "hard" investments. This is a challenge. The Kenyan Millennium Development Goals Assessment (UNDP 2005b) argues that the problem identified in Tana River District is universal in Kenya. There is significant investment necessary just to renew decaying water infrastructure. Moreover, the most important feature in Kenya's meeting its water goals is an increase in per capita water storage. This is not a "soft" problem. Such large scale infrastructure investments are

exactly the sort of investments that are the most difficult to achieve at the local level. In the rural sector it is a near impossibility as even collective revenues generally fall significantly short of capital improvement costs. In short, while local management of resources is possible, local infrastructure development absent significant fiscal transfers is a problem. Given its challenged funding regime, it appears that Kenya runs the risk of transferring fiscal shortcomings to rural areas where economic capacity is significantly lower than in urban areas. While this is a broadly applicable concern, this problem is very acute in the Tana River District where water resource scarcity has a long and recent history of leading to armed conflict between agricultural and pastoral communities.

Madagascar

In Madagascar the challenge is somewhat greater. According to the Millennium Development Goals Assessment (PNUD 2004) only 11.7 percent of Madagascar's rural sector had regular access to potable water in 2001. The goal is to bring it to 53.8 percent by 2015. A grating 71 percent of the population of the country lives in poverty, 62 percent in extreme poverty. Some 77 percent of the country relies on agriculture for a living making water a tremendous concern (UNDP 2002). Without a central planning facility, even a flawed one, infrastructure development is significantly lagging behind Kenya's.

The difference in governance between the countries is that in Madagascar there has been a national decentralization program in place for over a decade and it is not designed in parallel to a water decentralization scheme. The responsibility of development is being devolved from the central government to the region level with many functions, including water provisions, decentralized to the *commune* level. Thus if a community requires an investment in the water sector, institutional support, training, etc. then it must ask the region for assistance. Unfortunately, while Madagascar's governance may be concurrently deconcentrating to the region level and decentralizing to the commune level, Madagascar's fiscal structure remains one of the most centralized in the world. In contrast to Kenya, there is little history of local tax assessment. One of the issues is that there is a significantly higher percentage of the population that is rural and throughout much of rural Madagascar there has not historically been land titling. There are new initiatives in place to introduce land titling, but to date the rural sector lacks the income generation from land value assessments. Local governments thus don't have taxable land. There is also a limited formal business sector in rural Madagascar to tax. Further, state and regional capacity to collect taxes has long been wanting. As a result, only about 1 percent of revenue collected in Madagascar is local and local government is almost completely dependent upon capital transfers. VAT, Corporate Income taxes, and foreign trade taxes alone account for approximately 78 percent of total tax revenues. Deconcentrated expenditures (which generally go to the region for health and education) amount to approximately 10 percent of total revenues. For the Ministry of Energy and Mines, responsible for the water sector, only 3.56 percent is devolved. Decentralized expenditure (which generally goes to the commune) is only about 3 to 4 percent thus, with 1 percent local revenue collection, intra-governmental capital transfers amount to about 2 to 3 percent of Malagasy revenues (World Bank 2003). This amounts to an average of \$1.54 per capita in urban communes and \$0.86 in rural communes. In each of Ambovombe-Androy's 17 communes, under study herein, the total comes to US\$9800 or about \$0.55 per capita. These figures are for *all* commune costs. Transfer expenditures available to the water sector at the commune level are thus a fraction of these figures when available at all. Insufficient revenues are being transferred to the local level and a fiscal gap has emerged. As *communes*, especially rural *communes*, have taken on the responsibility of not only water facility management but water infrastructure development they have found that they lack the resources and progress is nil.

Community Responses to Governance Across Scales and Elite Capture in Kenya: The Case of Tana River District

Beyond the fiscal gap Kenya is faced with the challenge of creating a bureaucratically effective water management system in rural areas where poverty is high and development low. There have been two major problems. First, the relationship between the levels of governance have not made for effective management and, second, where advances have been made inter and even intra-community tensions have

arisen as the result of elite capture. In Kenya the “bottom up” of a community-based, decentralized system has actually been created from the “top down” with little local, especially rural, input. This poses a challenge of power. Elinor Ostrom (1999) discusses this problem in her widely received distinction between multi-level and polycentric governance. In the former responsibilities for resource management are distributed between different levels of government. However, there is no focus on the power distribution between those levels. In the latter the emphasis is placed on multiple centers for decision-making about the resource. “Polycentric systems are themselves complex adaptive systems without one dominating central authority” (Ostrom 1999: 528). The version of Integrated Water Resource Management adopted in Kenya is not polycentric. The nexus of decision-making remains in Nairobi. It therefore becomes necessary to communicate rules and norms down the levels of governance from the Directorate to the community and to communicate community needs up the levels of governance from the community to the Directorate. This sets up a neo-clientalist relationship.

The job of assisting communities in assessing their water needs, and communicating those needs to the WRMA or the WSTF regional offices, must fall to the district water office. For such a system to work, the District Water Officers in rural areas must stay informed of changes in rules and norms via regular trips to Nairobi. The district staff must then circulate this information in rural areas. The District Water Officer and staff must then assist the community in their formal bids for funding. Unfortunately, in a district like Tana River, regional water offices and communities are both ill equipped to manage the job at hand. First, there are only water offices in the towns of Hola, Galole, and Garsen for the whole of a very large geographic area (Appendix A). Second, there is not a budget for the staff to circulate or to maintain the (one) Land Rover. Third, road infrastructure is extremely poor throughout the district making access a challenge. Fourth, the only public transit is along the national highway, many kilometers from a lot of communities. Fifth, and most egregious, the process of applying for funds appears not to have been written with communities in mind. Tana River District has a significant education challenge. The population is divided ethnically between Pokomo farmers who have access to the Tana River and Orma pastoralists who do not have access to the river. Most schools are in Pokomo towns. There are few schools compared to the population (103 primary schools, 10 secondary schools, and 2 youth polytechnics; Republic of Kenya 2001) and these are underutilized. Those that do make it to secondary school regularly perform very poorly on national exams. As a result, literacy rates are low. Spoken KiSwahili is prevalent in the sub-districts near the coast, notably Garsen, and a large percentage of Pokomo speak KiSwahili to varying degrees of proficiency as a second language. Many fewer Orma speak KiSwahili. Few of either group are proficient in English. The process for assistance with water infrastructure investment, training, management and any other financially bound resource requires the completion of an application to the Water Services Trust Fund. The application is in English only. As designed, the questions are also well above the capacity of most communities and would require the community to invest in a consultant (Appendix B). Finally, with the bulk of funds coming from local, rather than national, sources, the money trickling down is scant. Communities appear to feel the weight of responsibility without the power of the purse.

Where there have been successful investments in local, rural water infrastructure they have often suffered from elite capture. For example: In reaction to increased conflict in the 1990s voluntary organizations, notably the Catholic Diocese, began working with the Arid Lands Office (directly out of the Office of the President) and the Ministry of Water and Irrigation to build 25 inexpensive earth dams (on average 20,000 cm of storage) and, less commonly, boreholes for Orma communities in the Tana River District. This is consistent with both the tenet of the strategy that calls for increased water storage and the tenet looking to increase water harvesting. It is also a stellar opportunity to introduce a response to water demand that can be effectively community managed. It could require community participation in the construction of the dam followed by the creation of community level management structures including fee structures for dam maintenance. The technical expertise requisite for the earth dam comes in capturing the season flows from surface laggers (small streams of run off from arid soils with low retention rates) and creating an effective filtering system by natural design (Appendix C). It is a relatively simple project with high success rates in construction. Earth dams in the south of the district, where there are

more rains, tend to maintain water year round. In the north, however, they are often dry for much of the year.

Communities and Ministry officials alike argue that earth dams and boreholes are a more efficient solution for Orma water needs than large infrastructure as the population is very dispersed and semi-nomadic. In general, communities were fast and successful at setting up water users' groups with a managerial committee. As argued in one focus group:

“We really appreciate the idea to construct the dam here because it has saved us time and effort we used to spend to get water from distant sources. We have tried to maintain it and nowadays we don't have many cases of water-related diseases. We have rules that govern how we use the water. We have tried to ensure that the place is clean and healthy but it is not an easy exercise. We have fenced the dam and employed a watchman to keep livestock at bay. [Second Respondent] Livestock do not have direct access to the water source; instead, the owner gets water and quenches the animals away from the source. There is a pump and whoever wants to use the water gets it from the tap point [sic; Third Respondent] We have a chairman, secretary, treasurer and members. There are also caretakers, who open and close the water point. Currently it's done by the women.”

Notable in this quote is the focus on livestock. At inception the earth dams were intended by the Kenyan Arid Lands office, the Ministry, and the Diocese for domestic consumption only -- livestock were disallowed. However, it quickly became clear that such a separation could not successfully be imposed on the communities. The Diocese took the lead in assisting communities to formulate strategies for maintaining the health of the water source. This is the reason for the clear articulation in virtually every focus group that livestock access costs and livestock access must be at access points away from the edge of the dam. With these rule reforms in place, the dams became popular within communities.

In contrast to many such community efforts, community elites fight to be on such committees as with it comes opportunity. Pricing is generally modest for the community, generally between 10KSH (\$0.14) and 40 KSH (\$0.57) per month with surcharges for those with a large number of livestock. However, foreign Orma pay excessive use rates -- as high as 1000 KSH (\$14) per day (payment can generally be made in livestock or cash). As Orma are a semi-nomadic population foreigners can often be from northern Kenya or even Somalia. However, the earth dams are intended to serve approximately 3,000 families while most water committees indicate only between 100 and 200 families registered. Foreigners can also be Tana River District residents traveling south in search of water or grazing for livestock. Thus “foreigners” can often be Orma and local. The water also elicits funds through penalties:

“Say if somebody opens water without permission he or she is fined. And the fine varies. Non-community members are charged 1000/=; and residents are charged 500/=. Those found washing in the prohibited areas are charged up to 1500/=” (Chairman of a Local Water Committee)

The dams are both a source of great revenue and conflict. Now that some of the earth dams are starting to age and require dredging it is clear that many of the committees banked only a small amount of those funds. The remainder goes to the committee members. As a result, it rapidly became the case in a number of examples that the earth dams became a social mechanism. The committees are comprised of community members who have moved into an elite status by virtue of their family heritage, personal wealth, or charismatic leadership abilities. The committees collect the fees for water use. The funds that are not banked are sometimes held by individuals but more commonly put into livestock that are integrated into the herds of those elites. In some cases those livestock are counted separately as one might consider water bank funds. In other cases the livestock become the personal property of the herd owners. In both cases the enlarged herd serves to buoy the herd owners social position. Thus water fees have empowered elites who could, via their position as a member of the water committee, capture the power of the region's most important resource for their personal gain. This is potentially further imperiling as it can set up a contest between community members for the lucrative water committee positions. Where the funds for maintenance don't exist it becomes necessary for communities to once

again ask for assistance. The voluntary associations and the state bureaus responsible for the construction of the earth dams are then faced with the decision of having to provide more funds -- effectively admitting that the scheme failed for reasons of community management not design or resource -- or let the dam collapse. The lesson here is about the potential volatility of the soft path. While prioritizing management is of course critical, it is equally important to ensure the viability of the institutional capacity, the membership, and the accountability mechanisms.

The Local Challenge: Perceptions and the Rise of Predatory Private Markets in Ambovombe-Androy, Madagascar

Ambovombe-Androy is a poor district of 17 *communes* in Madagascar's extreme south (Appendix D). As it is predominantly encompassed in a hydrologically closed basin and receives only about 300 mm or rain per year obtaining water is, by far, the most important concern of the citizenry.¹ The average person consumes an average of just over 5 liters of water per day, about 10 percent of the commonly marked water poverty line and about 1 percent of consumption in western countries. In the rainy season (about 4 months) most of Ambovombe's water needs are met by community level water storage facilities. For the rest of the year the population must rely upon three sources: boreholes and water catchments, the AES project (which trucks water from the Mandrare River), and informal water markets. All of these are insufficient, forcing regularized discussion by communities and leaders about how to improve the water supply of the approximately 300,000 residents.

As discussed, at the core of many of Madagascar's institutional changes is the deconcentration of development planning to the regions and the decentralization of management in many sectors, including water, to the *commune* level. The intention of such efforts is to put formal horizontal control on spending decisions and accounting practices. Expenditure should occur at the lowest level of government that can effectively capture costs and benefits to public service. The state should internalize externalities across jurisdictions and carry out expenditures that involve stabilization, distribution, or standards. The lack of fiscal transfer is an indication that the state is not living up to its end of the bargain. However, if the *commune* is to effectively capture costs and benefits then it must also be held accountable by the population. The Chief of Region is appointed by the Ministry of Decentralization so there is no accountability to the population. The mayor of the commune is elected, but, it appears, the population does not always take ownership of his position, authority, or level of government.

Community members were asked a series of questions about the nature of their community identity. The rationale is that institutional boundaries in an integrated management system should be social with communities delineating rights and jurisdictions (Barrow and Murphree 2001, Murphree 2000, Williams 1998). In all cases the response was that the "community" was the *fokontany* level not the *commune* level. The *commune* level, averaging three *fokontany* each, is perceived as too abstracted. Moreover, only a small percentage see local elections as the best way to hold a leader accountable. Eighty-four percent of the population prefers selecting a leader through community discussions; removal of the leader follows. The pattern of *fokontany* preference for governance transects sectors to include land and grazing decisions, water decisions, identification of community leadership, and conflict resolution.

[Insert Figures 1-3 here]

Overwhelmingly (85 percent) people *do* want to see a greater role for their communities. However, *who* should be in decision-making groups (such as water resource decision-making) are either members of a *fokontany* (59 percent) or a hamlet (35 percent). Only 5 percent of the population wants to see membership in decision-making groups decided at the *commune* level and zero want it any higher. To date *communes* have not received the fiscal transfers necessary for water infrastructure development.

¹ Unless otherwise indicated all statistics come from a survey conducted by the author in May-June 2005. The survey was a random sample of the district with 521 respondents stratified by *commune* and *fokontany*.

There have, however, been a limited number of public boreholes and water catchments development by international donors and non-government organizations. “Community” based water resource management committees have been constructed at the *commune* level to manage these facilities. The challenge is that even these minimal efforts are often not owned, trusted, or held accountable by the population. While most people know who their mayor is, few keep track of his activities and fewer see him often. Where the water committees are part of the *commune* leadership they are often seen as corrupt. Where they are constructed parallel to the *commune* leadership they are seen as a competitive source of power that undermines *commune* authority. In the case of Ambovombe-Androy *communes* hardly appear prepared for increased fiscal transfers for water or any other function if and when they should come.

The second source of water is the AES. This is a deconcentrated system within the Ministry of Energy and Mines. The process set up is that each *fokontany* (the smallest administrative unit in the Malagasy system) is to ask its *commune* for water. The Ambovombe *communes* tender a request for water to the AES. The cost for a 6 cm truck of water in 2005 was about US\$13. The system was corrupted from the start of the project in 1993 as drivers would hold the water hostage demanding a gift for the delivery, generally about the same cost as the water itself. As of 2005, 4 trucks were still in operation with the capacity to deliver 72,000 liters per day or about ¼ liter per person. The scarcity has forced a premium on the “gifts” (which can exceed US\$40) to the drivers and water delivery has become the prerogative of the rich.

The lack of successful resource regimes leads to a third option for obtaining water: opportunistic, often predatory, private borehole owners. The word “Ambovombe” means “the place of big wells” and the meaning still holds. Under most of the district’s sandy soils lies saline water if there is any at all. Ambovombe town grew as a result of its fresh groundwater and, while now woefully insufficient, it remains one of the few places where wells do not dry up in the starving season. In April or May, at the end of the rainy season, private water may cost US\$0.03 per 15 liter bucket (US\$2/cm). By September those same providers may charge upwards of US\$0.28 per bucket (US\$18.66/cm). If we consider that the average income in Ambovombe is less than US\$0.27 per household per day, rural water delivery in Kenya averages approximately US\$0.35/cm, and the city of Los Angeles USA, with a median household income of \$100.51 per day (US Census), pays an average of US\$0.77/cm (2005) then it is clear that comparably semi-arid environments have markedly different interpretations of water pricing. Residents of Ambovombe-Androy *are* willing to pay for water. At an average of 100 ariary per bucket (\$2.67/cm) they are willing to pay many times more of their income for water than urban consumers in Los Angeles are willing to pay (\$4.13/cm²). The challenge is that the water price regime is no more stable than the water regime itself.

The difference between a wealthy city like Los Angeles and a poor rural area like Ambovombe-Androy is not willingness to pay for water services. The difference is that the infrastructure investment has not been significant enough to stabilize water supply and cost. There is a substantial literature that describes how increased infrastructure decreases water prices by regularizing supply and eliminating the room for predatory private markets to operate (Bhatia and Falkenmark 1993). JICA is financing the study on a new drinking water supply system. The intent is to build a gravity fed pipe to transfer water from Manavy to Ambovombe and from Ambovombe to Antaritarika. The ongoing study will be finalized in August 2006. (African Development Bank 2005). There are some significant challenges. First, this would only address drinking water needs and not agro-pastoral needs. If, as mentioned above, there is not a clear distinction at the local level the pipe can be seen as unsatisfactory to a local concerned with their livelihoods. It could possibly even lead to local governance challenges as managers would have significant incentive to sell water for production use, particularly the watering of livestock. Second, while the pipeline would provide regularized drinking water supply year round within the willingness to pay of consumers, it would likely only be available within the central *Ambovombe* communes. Fourth, even presuming the state, in this case the Ministry of Energy and Mines, is infused by the African

² Derived from consumption and pricing figures of the Los Angeles Department of Water and Power (<http://www.ladwp.com>) and Alcubilla 2005.

Development Bank and the World Bank with the capital to construct the pipeline, and they achieve their goal, it does not abrogate *commune* responsibilities. These will include standpipe management by user associations, operation and maintenance of facilities, wastewater and drainage, and, most importantly, fee collection and financial management. Given the aforementioned challenges to “community” identity capacity development and popular accountability could prove a challenge. Further, as the standpipes will likely be situated only in the central *communes* (or perhaps even just Ambovombe *commune*) residents of other *communes* will have to travel to town to purchase the water. Beyond perceived community, they will be out of their voting jurisdiction and thus won’t hold an accountability measure. The opportunity for elite predation of the sort found in Tana River District will increase.

Conclusion

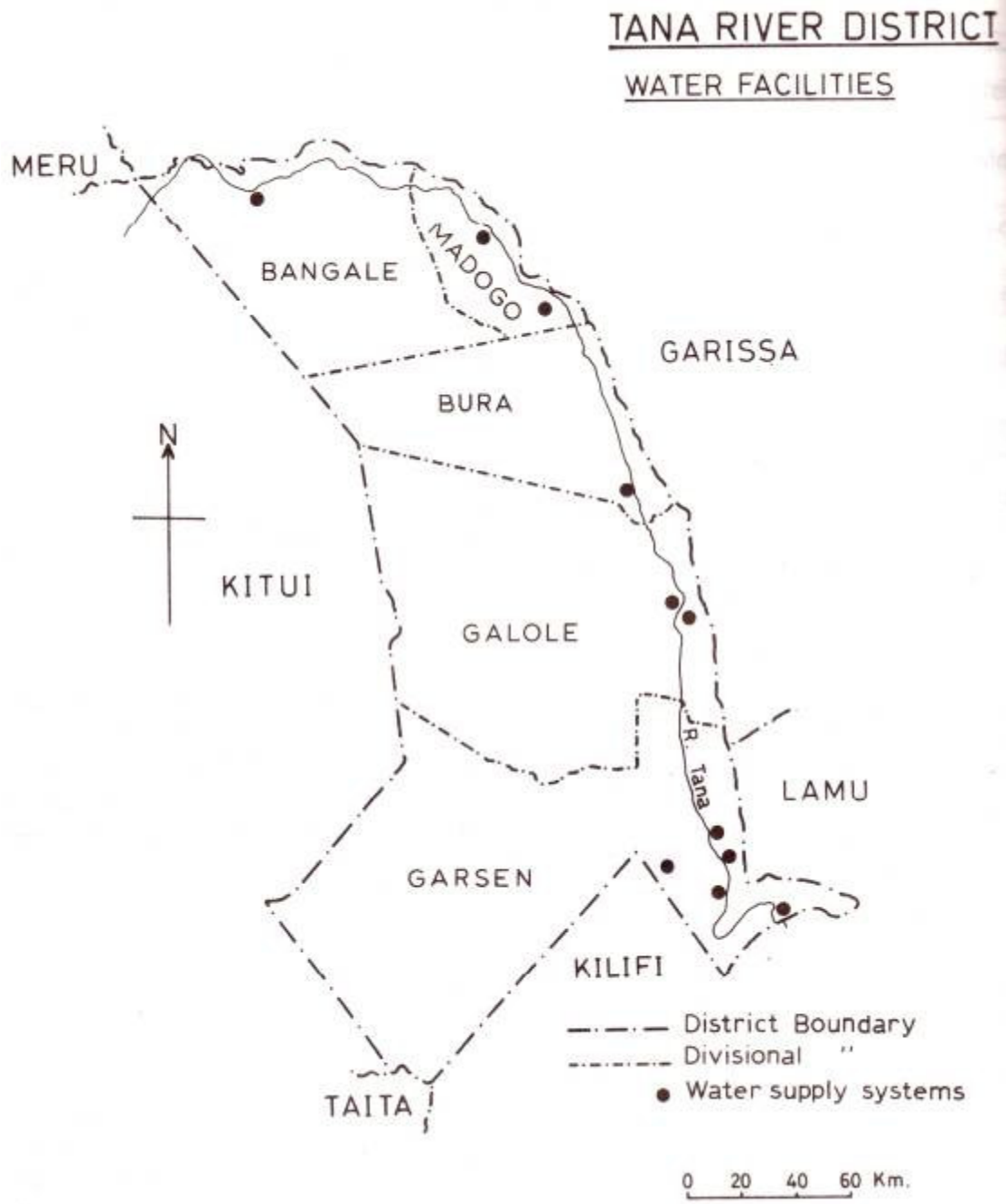
The history of water resource governance in Kenya and Madagascar is grim. Where Kenya’s bloated state organizations overbuilt infrastructure to the cost of the many and the benefit of the few, Madagascar’s public water sector has remained shockingly limited in scale and scope. The results are similar. Only 49 percent of Kenya’s rural citizens, and 11.7 percent of Madagascar’s rural citizens, have regular access to clean water -- a travesty in countries where two-thirds and three-fourths of the population respectively live in rural areas. The decision by both governments in the 1990s to reform their water sectors has opened up new promise. For the first time in history there is a global convergence on the priorities for water sector governance and both of these governments have embarked on this path that has proved rewarding from Singapore to Zambia. Kenya and Madagascar have started down this path of Integrated Water Resource Management. Dovetailing with democratic decentralization programs, the citizenry have new opportunities to express their needs and manage their resources in a sector that, despite its critical role to the survival of life, has had been neglected for generations. They undertake these projects with hope brought by new governments brought about by parallel steps towards deeper democracy in 2002 and the increased interest and funding of international donors.

With all the potential there are challenges to integrating water management across scales in Kenya and Madagascar. The largest problem in both countries is “where does the money come from?” In neither case has the fiscal gap and lack of local resources been sufficiently addressed. In both cases there are also significant institutional concerns. There is reason for concern over the preparedness of the local, rural institutions to take on the new responsibilities given to them. At the state level there is reason for concern that states are treating “integration” or “multi-level” governance as an opportunity to disengage from providing necessary leadership. This poses a problem for infrastructure support. This poses a problem for the development of legal, juridical, and regulatory frameworks. This poses a problem for ensuring the placement of mechanisms to ensure that communication across scales is fluid. This begs the question “who is the Leviathan” as water needs transect resource zones and end users compete over a commons of multiple jurisdictions.

The cases of Tana River District, Kenya and Ambovombe-Androy, Madagascar do not point back to the rise of vociferous states seeking to build water infrastructure managed for the few at the expense of the many. They do, however, point to a need to approach decentralized water governance with as much caution as optimism. Both countries have placed a strong reliance for funding on the private sector without creating a proper environment and without considering the important differences between privatization and public-private partnerships, let alone the nature of diverse potential public-private relationships. Private interests hold the potential for generating funds and building efficiency but they have a spotty history of water management in many countries, including Kenya, and thus they should be seen as a potential boon to a functioning water system with an effective fiscal transfer and a proven regulatory framework. The process of management is the same whether it is public or private. The question isn’t whether the private sector can substitute for an ailing state; the question is who is best placed to assume the risks of a viable system. Most importantly, there is an institutional crisis looming. There are myriad relationships between institutions at every level of governance and even more across levels of governance. The communities that are intended to take part in the management of water resources, hitherto marginalized from the nexus of decision-making process, create their own

relationships with institutions across scales and are, ultimately, germane to their success. If Kenya and Madagascar are to successfully integrate water governance in rural areas then there needs to be a more nuanced state-local relationship characterized by an open dialog and the regular fulfilling of the responsibilities by each level of actor.

Appendix A: Tana River District



Source: Ministry of Water and Irrigation

Appendix B: Water Services Trust Fund Application for Funds

WATER SERVICES TRUST FUND (WSTF)
Application Format

APPLICATION FOR ASSISTANCE TO A COMMUNITY WATER SUPPLY AND SANITATION PROJECT

SECTION 1: GENERAL INFORMATION

1.1 Name Of Applicant:

1.2 Title Of Project:

1.3 Address Of Applicant:

1.4 Location Of The Project:

1.5 District:

1.6 Division:

1.7 Location:

1.8 Registration By Social Services YES OR NO

1.9 How is your new project?

2.0 What is your project about?

2.1 Give name and skills/qualifications for the project employees/volunteers

SECTION 2: PROPOSAL SUMMARY

2.1 What are the specific problems the project intends to address?

2.2 How were they identified?

2.3 How will the proposal address these needs?

2.4 What are the objectives of the Project?

2.5 What is the total project budget

2.6 How much are you requesting

2.7 How will this project reduce poverty.

2.8 What will the beneficiaries contribute ? (the details to be given in Table 1)

SECTION 3: IMPLEMENTATION

3.1 Expected Project start date

3.2 Expected Project completion date

3.3 Design of the project (attach the design report including the drawings)

Table 1

Output	Activities	Time Frame	Budget		
			Community	Donor	Total

3.4 How will the implementation be monitored and evaluated.

3.5 How will you conduct final impact analysis.

3.6 Are there any anticipated problems or risks? Name and explain.

3.7 Give details of the expertise and capability of the proposed implementation (sub contractor, Team etc) how are you going to implement the proposed project – do you have the expertise and capacities.

SECTION 4: SUSTAINABILITY

How do you plan to maintain and operate your systems on long term basis?

SECTION 5: APPROVAL

Name Applicant: _____ Signature: _____ Date _____

CHAIRMAN Name: _____ Signature _____ Date _____

PROJECT

RECOMMENDED BY:

_____ Signature _____ Date _____

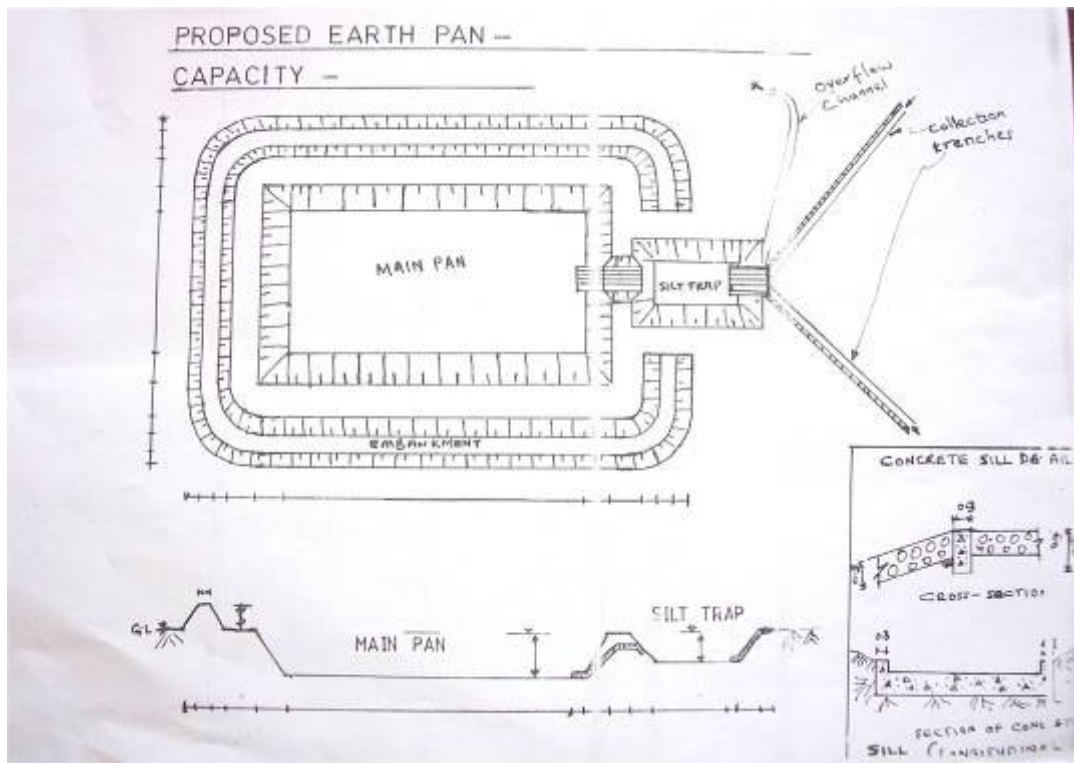
DISTRICT WATER OFFICER

APPROVED BY:

_____ signature _____ Date _____

COAST WATER SERVICES BOARD

Appendix C: Earth Dam



Appendix D: Southern Madagascar

Madagascar

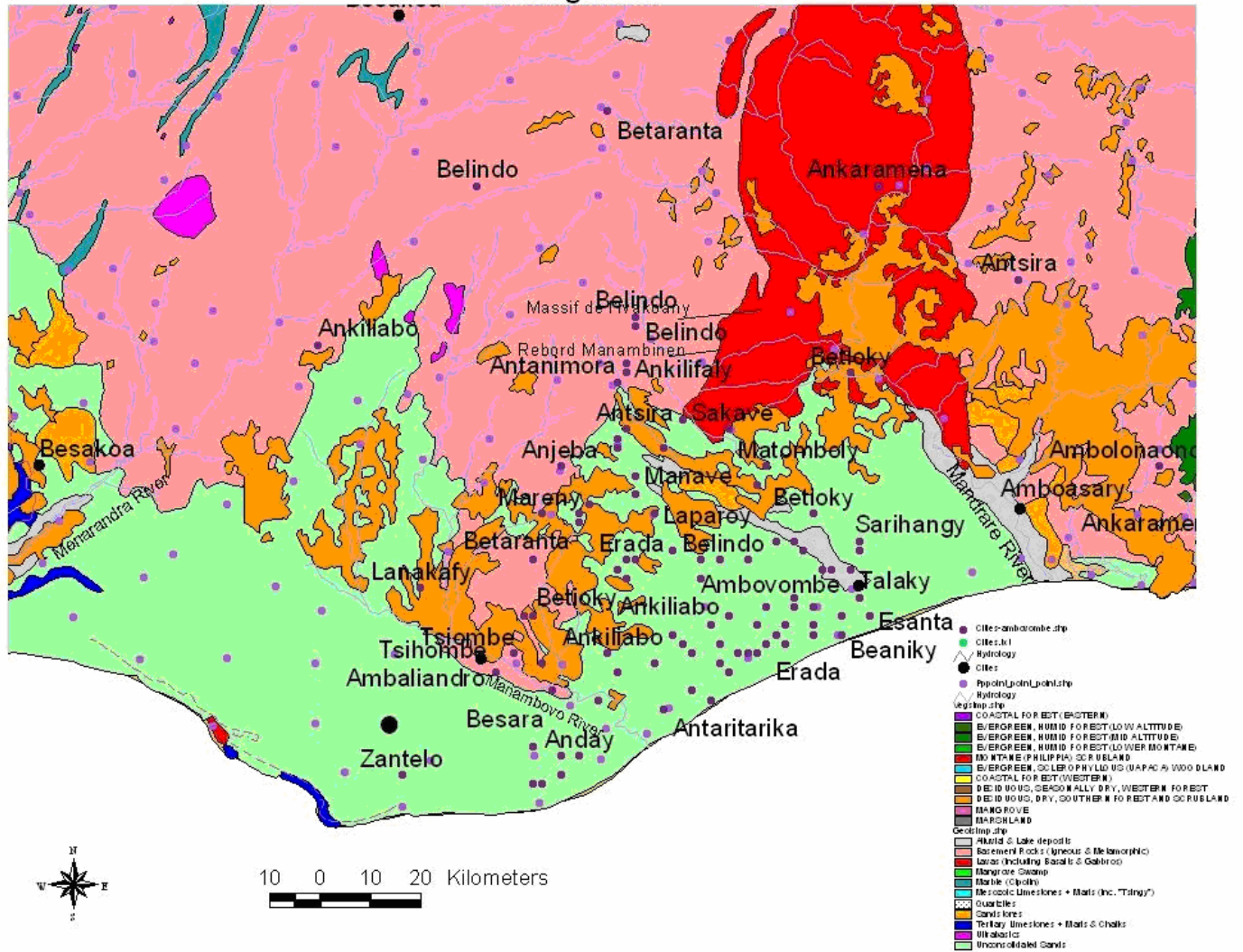


Figure 1: Community Perceptions of Land and Water Decision-making

	Who do you consider to be part of your “community” for field and grazing decisions?	Who do you consider to be part of your “community” for water decisions?
Hamlet	28%	21%
Fokontany	61%	69%
Commune	11%	8%
District	1%	2%
Above District	0%	0%

Figure 2: Community Perceptions of Leaders

	Who are your community leaders?
Hamlet Chief	3%
Chef de Quartier	89%
Mayor (Commune)	8%
Chief de Region	0%

Figure 3: Community Perceptions of Conflict Resolution

	If you have a problem, to whom do you go to resolve it?
Family	6%
Old Man	83%
Church Leader	1%
Mayor (Commune)	10%
Gendarmes	1%

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