

Where Community-Based Water Resource Management has Gone Too Far: Poverty and Disempowerment in Southern Madagascar

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Abstract: *Madagascar has struggled with the question of decentralisation for more than three decades. Since coming to power in 2002, President Marc Ravalomanana has both reformed and accelerated this process, granting new roles and responsibilities to regional and community leadership. This political path is consistent with shifts in natural resource management in the 1990s, notably in the water sector. We thus see the role of the national government diminishing in favour of resource management at the community level. This paper explores the impact of increased responsibility for water management and decision making in the southern district of Ambovombe-Androy. The assumption is that this sort of decentralisation leads to empowerment at the local level and improves accountability, civic engagement and equity. Unfortunately, in the case of Ambovombe, 'local empowerment' quickly translates to 'you're on your own'. 'Decentralisation' quickly translates into state disengagement. To avoid this, a finer relationship between state and local institutional relationships and responsibilities needs to be explored. Only once we understand what a community is, and what its capacity can be, can we figure out what responsibilities it needs to take on to ensure the efficacy of a state that tends to be at best inefficient and at worst predatory.*

Keywords: Madagascar, Ambovombe, water, CBNRM, community, power, decentralisation, governance

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INTRODUCTION

AMBOVOMBE-ANDROY is a poor district in Southern Madagascar. 'Poor' is too generic. For 8 months out of the year there is no water. No water for agriculture. No water for drinking. As a result, the usual impediments to development are rarely discussed. When there is no water all other activities lose meaning. As a result, Ambovombe-Androy is a district at the margins of an oft marginalised country. The question is what is being done about it. National policies are consistent with international norms that support Integrated Water Resource Management. Thus, the role of the national government is diminishing in favour of civic group resource management at the local (community) level. This sort of decentralisation is intended to empower the local population to improve accountability, civic engagement and equity. It addresses the greater responsiveness capacity of local authorities to local population needs while improving efficiency, equity and local 'ownership' of the governing process (Rondinelli et al. 1989; Manor 1999; Crook and Manor 1998; Blair 2000; Ribot et al. 2006). Decentralisation is thus an innately participatory action that is consistent with the deepening of democratic norms. Yet, for these norms to be actuated, citizens must not only be able to vote and hold office but also hold the power to act collectively (Blair 2000).

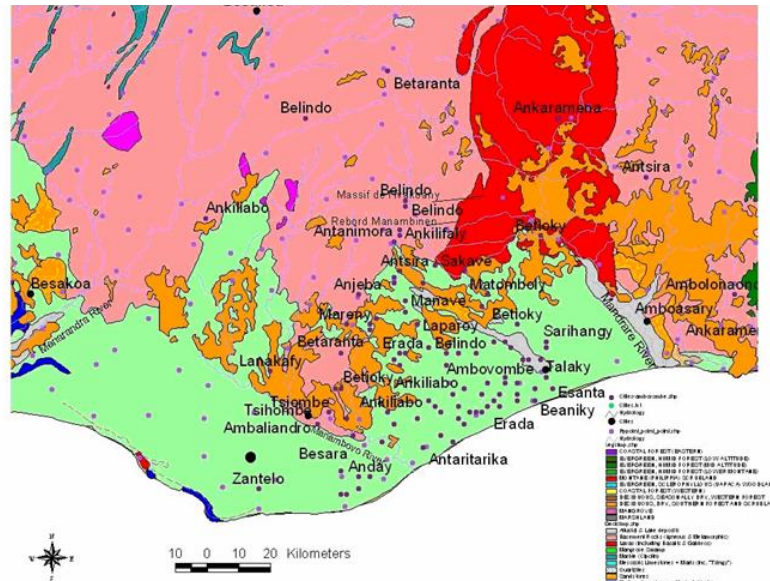
Unfortunately for the case of Ambovombe, 'local empowerment' quickly translates to 'you're on your own'. 'Decentralisation' quickly translates into state disengagement. In this sense the state actually undermines the decentralisation process. In a multinational study, Ribot et al. (2006: 1864-1865) determine that the incomplete process of decentralisation sees states grabbing power by limiting the types of power that are transferred and choosing local institutions that serve central interests. As a general rule Madagascar appears to reflect both of these patterns. Yet, it presumes a vested need for sectoral power by the state in the region for neopatrimonial or other ends. In the case of Ambovombe-Androy the process appears closer to marginalisation. The need for central power in the region's water sector is minimal as long as there is no infrastructure. The lack of water is the power. This paper seeks to apply a finer lens in looking at this relationship between state and local institutional actors and their responsibilities.

Travelling west on Route Nationale (RN) 13 from the southern port city of Tolagnaro starts with a visual feast. More than 1500 mm of rainfall each year brings lushness to the area as the lowland rice paddies blend towards the 4000 ha of humid forest. Warm, humid winds engulf the region. After about 30 km the road begins to wind up into the Anosy mountains. The mountains provide an orographic effect, effectively blocking the ocean winds and creating a microclimate. Looking east of the mountains the humid zone is dotted with what remains of primary rainforest. Descending down the westbound road into the Amboasary-Sud district, rainfall averages drop to 600 mm per year and the flora begins to transition into dry-deciduous forest. Wet rice pad-

dies give way to commercial *sisal* (*Agave sisalana*) farming. By the time the road reaches the town of Amboasary, only 70 km from Tolagnaro, the duration of the starving season increases from 2-3 months to 4 months. The levels of development decrease two-fold and the level of marginalisation increases.¹ The saving grace for Amboasary is the Mandrare River. While irrigation infrastructure is limited, its banks and alluvial soils have ensured that domestic water needs are met for the 184,000 inhabitants (official figure) of the district and that 70 per cent of the population remains in the agricultural sector.

We continue west on RN 13, crossing the Mandrare's ailing steel bridge. The volcanic ridge delves into a hydrologically closed basin as we enter Ambovombe-Androy district. Rainfall averages drop by half in the 36 km it takes to reach the district capital of Ambovombe. The forest is gone and in its place unconsolidated sandy soils give rise to the beginning of the unforgiving Spiny Forest ecosystem. The percentage of population engaged in agriculture drops by 20 per cent. Rice cultivation is replaced by manioc and sweet potato. Irrigation infrastructure (generally for rice and manioc) drops from 49 per cent of farms in Amboasary to zero in all but one Ambovombe commune. Survival is based on the management of 14,000 heads of cattle spread out among the population (Figure 1).

Figure 1
Southern Madagascar



Even worse than the lack of irrigation water in Ambovombe is the lack of water for livestock and domestic consumption. Rainwater harvesting is limited to wealthy small holders, generally those who inherited the houses built by French settlers during the colonial era. With so little rain, and most of it arriving within a 3-month period, collection facilities are costly and difficult to maintain. There are no rivers. Groundwater resources are scant. As detailed below, limited resources and extreme demand drives prices to unobtainable levels. 'Development' becomes a tattered shroud for poverty management. Those who live on less than a dollar a day are considered poor. By this measure over 85 per cent of the population is poor, compared to between 65 and 75 per cent in Amboasary.² But this measure has little meaning. Amboasary is still poor. Forty-nine point one per cent of Madagascar is poor. Three-hundred and twenty-three million people in sub-Saharan African are poor (UNDP 2004). It is a figure so aggregate as to mask vast differences in poverty. In the case of Ambovombe, it masks intra-community class structures, and, more important herein, the stark difference from most of the rest of Madagascar that there is little hope within the population and little action on the part of the national or international community to move beyond humanitarian services to poverty alleviation, let alone 'development'. According to a local mayor (in a June 2005 interview):

'In our commune, the problems are numerous and it is not possible to cite them all here. But we can summarise them like this: our commune, and our region of Androy, is marginalised by the central government. Even the president of the republic doesn't want to visit. There are consequences of this marginalisation. We are the poorest part of the country of Madagascar. Moreover, the rain doesn't fall here and that aggravates the problem of water and chronic famine is irresolvable. For our commune our fundamental problem, which we often say to the state, is the absence of water.'

The development focus is quite narrow: augment the water supply through improved institutional management at the local level.³ However, there is little water supply to manage and efforts to augment supply are routinely scuttled.

In this paper, I use the case of Ambovombe-Androy to argue that international water policy norms that advocate decentralising water management and decision making to the local level do hold the potential for positive outcomes, but they can also increase, rather than decrease, water scarcity. Community organisations can be highly effective but only where certain conditions are met. They are effective at turnout or primary delivery point level (Rosegrant 2002)—when the regularity of the resource is assured by the state (or the state in partnership with regional government and/or the private sector) and the definition of community, its rights, responsibilities and capacities, reflect that of the local population. In contrast to dominant critiques of global approaches

such as sustainable livelihoods (Chambers and Conway 1992), resource imperialism (Adams 2003) and free markets (Barlow and Clark 2002), my finding is that political decentralisation associated with resource management localisation and implemented as part of an untested perception that budding democracies are enhanced by local empowerment, has led to a disengagement of the state, its economic resources, and its management capacity. Rural communities are suddenly faced not with increased opportunities for institutional participation, transparency, or oversight, but with having to pay exorbitant costs for water delivered in irregular intervals.⁴ They must manage the resource at these irregular intervals or rise to the challenge of managing the resource at the supply level. People in Ambovombe are savvy, but ill-prepared to carry out these imposed municipal functions and unable to raise the level of user fees or community taxes necessary to fund infrastructure development. As a result, systems are neither complex nor adaptive⁵ and decision making at the local level is limited to market opportunities at hand. Donor-funded projects support 'appropriate' technologies that prop up overpriced and unsustainable water delivery markets and mine water without proper scientific review. The result is the concomitant manufacturing of economic hardship and water resource scarcity. I thus argue that the universal decentralisation of water does not improve participatory (in some circles considered 'democratic') access as much as it undermines effective governance. A new, more nuanced view of state responsibilities and community participation that ensures both resource perpetuation and not just participation but viable choices by community members is now overdue.

INTERNATIONAL WATER POLICY NORMS AND THE STATE

In 1977, The United Nations held the first Conference on Water in Mar del Plata, Argentina. The Action Plan that followed (1983) concluded that '... relatively little importance has been attached to water resources systematic measurement. The processing and compilation of data have also been seriously neglected'. The 1987 Brundlandt Report (*Our Common Future*) helped us further define the problem. Bringing to currency the term 'sustainable development', it argued that development must meet the needs of the present without compromising the ability of future generations to meet their own needs. Sustainable Development challenged a growing notion that resources should not be consumed and instead agreed with the Lockean notion that the Earth was there for us but with the caveat that it must remain intact for our progeny. With water singled out, the global norm that it should be consumed, but not depleted, was launched.

'Sustainable' water use was further codified in the 1992 Dublin Conference. The same year, at the Earth Summit in Rio de Janeiro, advocates of sustainable development argued that 'all peoples, whatever their stage of development and their social and economic conditions, have the right to have

access to drinking water in quantities and of a quality equal to their basic needs' (UNDESA 2002). This fundamental commitment to doing what it takes to ensure water resource sustainability has been reiterated in international fora repeatedly over a decade.

If we are agreeing to consume water despite the recognition that there is a growing crisis of scarcity then we have to decide *who* gets to make decisions about that process? Is it the role of government, in which case we should discuss mechanisms and bureaucratic modalities for water governance or, is it up to the individual as regulated by civil society? Writers considering sustainable development (UNDESA 2002; Chambers 1997; World Bank 2003), common pool resource management (Korten 1986; Berkes 1989; Poffenberger 1990; Western and Wright 1994; Ostrom et al. 2002; Deitz and Ostrom 2003), and global norms in water management policy (WMO 1992; OECD 1998; Kemper et al. 2003) all have come to point in the same direction: (1) all resources, especially water resources, need to be managed, (2) decision making across multiple levels fosters sustainability, and (3) communities, especially rural communities, have a greater interest in managing resources sustainably than state or corporate managers. Communities are more aware of local environmental processes, and thus can be mobilised to manage the resource within multi-level natural resource use regimes. In the water sector, these assumptions codified in the Dublin Accords are reflected in attempts at complementing centralised physical infrastructure with lower cost community-scale systems, decentralised and open decision making, water markets and equitable pricing, application of efficient technology, and environmental protection (Gleick 2003).⁶ The four 'Dublin Principles' read (1992):

Principle No. 1—Fresh water is a finite and vulnerable resource, essential to sustain life, development and the environment

Principle No. 2—Water development and management should be based on a participatory approach, involving users, planners and policy makers at all levels

Principle No. 3—Women play a central part in the provision, management and safeguarding of water

Principle No. 4—Water has an economic value in all its competing uses and should be recognised as an economic good

Consistently, the enhanced role of local communities in construction, ownership, management, administration, operation and maintenance of water supplies is considered as a good thing. Not often considered, however, are the dynamics of the communities themselves. How well does the state function at the community level? What is the relationship between local government and civil society? What is the role of *equity* of stakeholders in the decision-making process? If participation is determined by the *right* to participate and income is treated as a constant then the *ability* to participate is not a factor.

What is the relationship between sustainability and equity in accessing the commons and how is this affected by institutional structures?

Given its ability to engage diverse cultural norms through a universal sustainable development tenet, the idea of multi-level governance or polycentric governance institutions is normatively appealing. Yet there is little exploration of its empirical validity; where it is explored, it is generally in an attempt to maximise multiple actor regime effectiveness. As Ostrom (1999) has eloquently argued, in order for multi-level resource use designs to be successful multi-level systems they must be viewed as complex adaptive systems in which there is no dominating central authority. Linkages need to be made between international, state, and local interests in order to determine who gets to make what decision about water resources and why they get to make those decisions.

Agrawal and Ribot (1999) discuss this problem of linkage between the state and local interests as a relationship gap between actors, power and institutions. When actors do not share goals for conserving resources and are unequally powerful, as is commonly the case, institutions are significant for two reasons. On the one hand, they denote some of the power relations (Foucault 1983: 222, 224) that define the interactions among actors who created the institutions; on the other they also help to structure the interactions that take place around resources. Once formed, institutions exercise effects that are independent of the forces that constituted them. While they characterise international actors as working within such state thinking, it is not an intellectual stretch to consider international actors as an integral part of the power relationship, particularly in cases like Madagascar where international and state policies are virtually fused.

In a different work, Agrawal (1999) finds that there are processes not captured by spatial allocation. The narrow geographic focus of managers at local levels makes them inappropriate managers for geographically larger resources. This appears to be the case in Ambovombe where water supply is and will increasingly be tied to geographically broader supply areas; the level of scarcity within the district and broader (deconcentrated) *region* mandates negotiated interactions across localised and even regionalised governing units. As the state level governing authority in the water sector cedes responsibilities to lower levels that lack the capacity or jurisdiction to secure water, and the state disengages, the likely outcome is not a power struggle—it is a power vacuum in which there is no authority capable of addressing the dire water resource needs that are both longstanding and rapidly growing.

To be fair, the problem is recognised by the people who implement policy in the field. For instance, the World Bank funded a 'pilot project' for water in Southern Madagascar called PAEPAR (*Projet d'Alimentation en Eau Potable et d'Assainissement en milieu Rural*). The project exemplifies the decentralised approach that dominates international water policy. The articulated project objectives were to: (1) 'endow the public sector, the private sector and the

communities with institutional means and appropriate technical materials so that the supply of water and sanitation in rural zones is assured in an efficacious, economical and permanent manner' and (2) 'to bring communities to participate in the preparation, execution and management of the installations of potable water, and contribute to costs of maintenance'. The project literature goes on to delineate, in order, the manner of local participation and the relationship of the local groups it creates to government and international institutions across levels. Presumed is that the answer to the water debacle in southern Madagascar lies at the community level and in local participation. This significantly limits the types of water supply that can be investigated, as larger supply projects that transect multiple communities require higher levels of management. As discussed below, the Bank's project is taken by all involved, including those who funded it, to be largely unsuccessful. In a 2004 interview with one World Bank official in Madagascar, for instance, the author asked: if this model has failed then what is the alternative? He replied: 'I'm eventually going to think about [that]'. What is important here is that this official identified the local approach as a 'fractured' approach that undermines the end goal (sustainable water resource use while augmenting supply) but one that the Bank is unlikely to move away from in the near future.⁷ Nearly 3 years hence his response appears to be accurate in this setting as the PAEPAR project was not renewed and new World Bank efforts in the water sector, integrated into the 2007-2010 Country Assistance Strategy, focus on ensuring the viability of the (urban and periurban) water utility and expanding irrigation in the high-production rice bowls.

The Malagasy state is following the universal policy trend in land, forest and water management. This brings up two questions: how does the decentralisation take place and what is the nature of governance over that process? Here Robin Mearns' (2004) discussion of decentralisation in Mongolia is instructive. Mearns (2004: 133) argues that 'contemporary Mongolia is characterised by a mosaic of formal and informal institutions, including the results of new experiments in policy making seen alongside the remnants of old arrangements and patterns of behaviour'. The institutional reforms introduced by the state are multitudinous and overlapping. 'While the stated intentions of many of the reforms in question are to promote social inclusion and environmental justice, their practical outcomes currently have precisely the opposite effects' (134). In some cases, she argues, the decentralisation is consistent with both democratic decentralisation norms and local institutions. In many they are not, thereby causing an imbalance of power between actors that undermine local capacity for holding leaders accountable. The critical distinction here is between decentralisation ('formal transfers of power to actors and institutions at lower levels within a political-administrative and territorial hierarchy' Agrawal and Ribot 1999) and democratic decentralisation ('power and resources are transferred to authorities representative of and downwardly accountable to local populations' (Ribot 2002)). Mongolia's decentralisation,

consistent with international norms, often fails to meet the democratic litmus test and the lack of accountability in the process leaves but a thin institutional hull incapable of serving vital management functions. Moreover, there is an ongoing crisis of fiscal centralisation.

Madagascar is faced with the same challenge. There is a similar mosaic of informal and formal institutions at the local level. Democracy at the macro-level may be growing horizontally but decentralisation is failing to allow for downward accountability to local institutions in a vertical manner. The problem in Madagascar is made more complex by the overlapping deconcentration process. Where decentralisation transfers power to the local level, deconcentration creates regional and/or local institutions that are vertically accountable upwards to the central administration. The twenty-two *regions* in Madagascar, created by President Marc Ravalomanana in 2004, supersede the district power while adding to the (decentralised) *commune*-level responsibility. Communes, the most local level of governance, are thus accountable to their local populations but responsible to the regional leadership appointed by the central government.⁸ In Madagascar the creation of deconcentrated entities is thus an institutional effort to undermine the accountability requisite for decentralisation to succeed. The lack of fiscal decentralisation apparent in the Mongolia case is even more alarming in Madagascar. The central government collects 97 per cent of total revenues. The decentralised level, *communes*, account for 2 to 3 per cent of revenues with a significant urban bias in distribution. Deconcentrated entities, *regions*, account for approximately 10 per cent of revenue expenditure. While responsibilities for development might be shifting downwards, financing for it is not creating a significant fiscal gap (World Bank 2004).

Turning to the water sector, there is a Ministry of Decentralization in Madagascar, but that is to ensure compliance with decentralisation of political institutions. Natural resources fall either under the Ministry of Water and Forest or the Ministry of Energy and Mines with water falling under the latter. As put by Herivelo Rakontondrainibe of the Malagasy Directorate of Water and Sanitation, Ministry of Energy and Mines in September 2003: 'now we have a policy, we have a strategy, and we know the importance of community involvement, and of the need to decentralise...' Madagascar's Water Code, written in 1998, states as its primary point that water should be universal, well managed, and not a free good. Water is necessarily in the public domain, but must be managed and conserved by assigning a value. The management, distribution, organisation, and financing can be public or private, but it must include a cost recovery mechanism and must involve local participation. It also follows the trend which began with Dublin that water is not treated as a whole. Drinking-water policy and infrastructure would be separated from agricultural and industrial policy and infrastructure. From a delivery perspective this makes sense. From a resource management perspective, however, it appears somewhat strange since the resource supply is the same, the population

of the country is largely agrarian, and the country's economy is primarily agricultural. The agricultural sector is completely omitted from the primary goals of the document. Chapter 3, Section 1 of the Water Code does ultimately address irrigation needs. Yet even this section merely describes the process of obtaining irrigation rights (via the National Water and Sanitation Authority) and does not say anything about management, organisation, policy, or financing of water for agricultural purposes. It would appear that the Water Code is inconsistent with the Millennium Development Goals that President Marc Ravalomanana enshrined in the Madagascar Action Plan (the hallmark of his development efforts) in March 2006: reduce by half the proportion of people without sustainable access to safe drinking water by 2015 (goal 7), reduce by half the proportion of people living on less than a dollar a day (goal 1), and reduce by half the proportion of people who suffer from hunger (goal 1).

The last of these in particular appears problematic. Agricultural water policy that does exist is not well codified, but it does have certain objectives. These are to *maintain* irrigation infrastructure, *reduce* the state contribution to irrigation, help the state *disengage* from the management and maintenance of irrigation, and increase infrastructure investments from *rural users*. Consistent with donor policies, it is attempting to do this by establishing community-level water users associations (parallel to the commune-level government) and giving management responsibilities to them (Dinar and Subramanian 1997).

There is an empirical question here about state functionality. Despite significant reform that brings in community voice, there is systemic failure of institutions to sustainably deliver sufficient water. Does the state provide an enabling environment where the diverse stakeholders can engage at the community level or is it merely devolving responsibility? Is it that the relevant population does not accept the state, successfully rebuffs it, or otherwise fails to be captured by it?⁹ Does the state itself engage in resource exploitation for the primary purpose of its own empowerment (Scott 1999) thus mandating its marginalisation in favour of community decision making? Is state disengagement about local empowerment or about self-seeking leaders ridding themselves of the responsibility of expensive water sector development? Is the state a (lame) leviathan responsible for the equitable development of water resources?

THE CASE OF AMBOVOMBE

'This is the remotest area from Tana [the capital]. People don't see really what's happening here, so most of what the programming for this region is, isn't really implemented because it's very remote and people don't really know exactly what's happening, they don't know. So they can take advantage' (Male resident, Ambovombe town).

Ambovombe-Androy is a district (*fivondronana*) of about 184,000 inhabitants within the Tulear province. Divided into seventeen communes, there is a fair amount of economic and livelihood diversity.¹⁰ A majority (69 per cent) of the population (author's survey) claim farming as their primary occupation and none claim herding as their primary occupation. This can be attributed to a distinction, common throughout southern Madagascar, between the notion of farming as a labour pursuit and herding as a social pursuit even if it is for economic ends (Rakotoarisoa 1998). The distinction between pastoral and agricultural activity is thus artificial even though in Ambovombe pastoralism dominates the economic and social milieu (Heurtebize 1986). Ambovombe is one of Madagascar's poorest districts, and is one of the three districts in southern Madagascar that suffer from extreme water scarcity. Ten of the country's eighteen communes that regularly experience severe food scarcity are in Ambovombe district. Associational life is weak, and concomitant social capital is low (Marcus 2000). Despite donor and government efforts, only one commune (Antanimora Sud) claims the existence of a regularised water user's group.

The extreme east of the district benefits from the Mandrare River and the extreme north of the district ascends the northern boundary of the basin to where rainfall is, if not plentiful, adequate. Three communes suffer from water scarcity, and have coping mechanisms that may be inadequate, but function well enough that food, access to markets, or education are of a higher concern. For twelve of the seventeen communes, the majority of the district's population, water dominates daily concerns, household labour and the local economy.

The hyphenation in Ambovombe-Androy comes from its distinct ethnic identity. Tandroy is one of Madagascar's eighteen ethnic groups and Ambovombe is the capital of Androy. Amboasary-Sud district to the east is predominantly of Tanosy ethnicity and there is modest social tension between the two groups for both historic- and resource-based reasons.

The Tandroy people have long lived with water shortage. The word 'Antandroy' itself means 'people of the thorns' in reference to the Spiny Forest in which most of the population lives. There are western accounts of water concerns dating back to Etienne de Flacourt 400 years ago (with more notable descriptions at the onset of the French colonial period). This has resulted in a history of diversification in both agricultural production and animal husbandry, high migration trends (Heurtebize 1986), and the use of *raketa* (cactus fruit) for meeting animal (and sometimes human) water consumption needs. The problem today is significantly magnified. Population pressures throughout Androy and neighbouring Androsy and Mahafaly regions have limited migration options. Some seek alternative employment in regional cities or the capital but jobs are few and far between (Heurtebize 1986). The use of *raketa* was a source of conflict during the colonial era (Kaufmann 2001). At times these conflicts were severe enough to obviate its usage. Environmental change

and increased consumption in recent years has significantly reduced the *raketa* availability even as the current debate is whether its production should be increased as a socioeconomic good or curtailed as an ecologically damaging invasive species (Middleton 2002). As a result, when the people of Ambovombe claim they have decreasing water access their concerns tend towards two buckets per day per household—about 5 l per person (1/100th of average US water consumption). The World Health Organization view is that below 20 l per day is water poverty. The United Nations argues that below 50 l per day is water poverty.

Part of the decline in water availability has to do with climatic shifts that have led to a decrease in rainfall. The country as a whole is expected to see water availability decrease by nearly two-thirds by 2025. Following from Gleick (1993), Madagascar withdrew 41 per cent of its 40 km³/year renewable water resource. Estimates today range as high as 60 per cent of its renewable water resources. Madagascar already is a country in water stress by diverse measures (UNEP 2002b; Falkenmark 1989). With only 45 per cent water supply coverage (WaterAid 2006) and a population growth rate of 2.8 per cent Madagascar is at risk for entering into water scarcity. Even more challenging, the supply is poorly distributed (UNEP 2002a; WaterAid 2006). As a result, some areas, particularly the south of the country, already see high levels of water stress while others, such as the northeast, are among the wettest places on earth. Madagascar has suffered along with East Africa in El Niño-Southern Oscillation effects and since 1968 there have been decreases in rainfall (UNEP 2002a). There is some evidence that climate change is having a positive effect on water drainage areas in some parts of Madagascar and a negative effect in others (de Wit and Stankiewicz 2006) and further evidence of a disproportionate change in climate in southern Madagascar (Vallet-Coulomb et al. 2006).

The larger concern, however, is the dramatic population growth as a whole. The cultural value and social status based on family in Androy, and the value of sons for herding, buoy a growth rate significantly higher than the national average.

'Most holes are dry here. Water's rare...so the price is 750 [francs], but that is not something that you just can find anywhere. You have to try hard to access a bucket of water because there's none anywhere. If there is like a small quantity in town, everyone just comes here and buys it and then it's not, not sufficient for everyone' (Male resident, Ambovombe town).

Water in Madagascar has historically been the responsibility of the Department of Water within the Ministry of Energy and Mines. The 1980s saw a seesaw imbalance between market incentives and wanting water resource infrastructure. This led to the regularised need of World Food Programme (WFP) intervention. This forced the Malagasy state to recognise the urgency

of the water crisis in the south and it created the *Alimentation en Eau dans le Sud* (AES). The AES operates exclusively in the south of the country, operating parallel to the Department of Water within the ministry. It was created by presidential décret 86-241 in August 1986 with the idea of organising statutes for water management in the south. It is the only public water supply interest in the region. It has an operating budget of Malagasy Ariary (MGA) 496 million (US\$ 271,483). There is no provision in the AES budget for investment. Ambovombe town, home to about 46,000 people, is the dusty district capital. There are a small number of water-harvesting facilities and several publicly owned boreholes. The AES has several other borehole facilities in town, but most are too saline for human consumption. The remaining water needs, which are plentiful, are met in part through private boreholes. One part of town in particular has had success in digging freshwater wells and there is no shortage of profiteering by their owners. The AES rate for water from boreholes, when it exists, is 30 MGA per bucket. In April or May, just after the rainy season, private water may cost 1000 MGA per barrel (500 l) or 50 MGA per bucket (15 l). By September those same providers commonly charge 300 MGA per bucket. In late 2003, 500 MGA per bucket was not unheard of (Figures 2 and 3).

The problem is that in May there is some water in rural areas left over from the rains. By September that water is long since dried up. People dig in the sand to fill buckets one cup at a time and, ultimately, are forced to travel to Ambovombe town to fill a water bowser (a barrel on the back of an ox cart). This strains Ambovombe town's meagre water supply.

'The rainy season runs through December, January, February, perhaps up to June. There is often rain, so the need for water is less. But during the dry season from July to September, October, November, when it's dry, then the need for water from, from Amboasary more often. So we must rely on them because [here] it's dry' (Female resident, Ankaremena village).

The WFP, among others, has tried to create alternatives. In the 1990s, the WFP helped create storage facilities in rural areas. Unfortunately, most of the time the water was not plentiful enough for it to last more than an extra month, and the committees built to maintain the storage areas were ineffective at doing so. Further, the practice of digging for water in Ambovombe leads to very high turbidity. Clay-like solids in the water require removal and the water requires purification. Solids are not necessarily harmful in themselves, but in this mineral region mica or other contaminants can cause illness. Solids can also carry pathogens (*Escherichia coli*, *Cryptosporidium*, *Giardia lamblia*, etc.) and they make it difficult to purify the water to reduce diarrhoea, cholera and other diseases. The purification process requires boiling, and fuelwood is very dear. As a result, well-intentioned programmes like that of the WFP bring about only a small augmentation of low-quality water.

Figure 2
AES saline borehole



Figure 3
Buying water in Ambovombe town



In 1993 the Government of Madagascar, through the AES, entered into a cooperative agreement with the Government of Japan for the amelioration of water supply in southern Madagascar. The strategy was curious from the start. Two dozen water trucks were purchased by the Japanese government and a gravity pump-fed water filling station was built alongside the Mandrare River.¹¹ The AES was put in charge of managing and maintaining the new equipment and intervening in the Ambovombe water market. Each of the trucks held 6 m³ of water and could fill, drive to Ambovombe, discharge, and refill four times a day for a total of 576 m³ per day. This is a scant contribution to the realised need of the population, but nonetheless critical (Figure 4).

The administrative process set up is that each *fokontany* (the lowest administrative unit in the Malagasy system of governance) is to ask its commune for water. The Ambovombe communes tender a request for water to the AES. The cost was set at 15,000 MGA for a commune, 24000 MGA (about \$48 in 1993) for a private request and has remained constant (about \$13 today). According to information from focus group discussions with community members, the system was corrupted from the start, as drivers would hold the water hostage demanding a gift for the delivery. As the years passed the AES fell short of its maintenance responsibilities. By 2004, only six of the twenty-four trucks were still in operation.¹² According to the AES regional operations director there is a 'problem of the tyres'. He explained that it is difficult to get replacement tyres for the trucks in this area. The author tried to clarify: 'Just

Figure 4

Water truck at filling station



the tyres—is this the only problem with the other trucks?’ ‘Yes, just the tyres.’ ‘If I were to buy new tyres for the trucks...?’ ‘Then we would be very happy.’

‘When [the AES water truck project] started it was running well; it was good, but that was back when it started. Then people started to be corrupted and started taking parts of the truck to sell. Like taking wheels, tires and sell them to other private individuals so things like that. I am not very confident that the government would be good to run the project. Maybe it would be better if it was like private, if it was like privately run...[the project] should be closely inspected to make it run properly or else just people get corrupted easily...the people here are corrupted and also the mentality of people wants this money, they steal the money so it never reaches its destination’ (Male resident, Ambovombe town).

The author was able to account for six other trucks in various states of disrepair; four in the AES repair yard and two pieced out for private household water storage within Ambovombe town. Community members throughout the district accuse the AES central office of being corrupt. Specifically, the accusations are that officials sold off trucks in part or in whole for their own profit even before the period of disrepair began. This is wholly unsubstantiated, but clearly there is more of a problem than obtaining new tyres (Figure 5).

Figure 5

Water tanker disassembled for private use



The smaller number of trucks means each truck's cargo has a higher premium. Water pump station officials report that each truck comes two to three times per day (not four). The process of tendering a request to the AES seems to have completely broken down. Communities report that a truck arrives every 1 or 2 months. It is generally half full, the other half having been sold off en route to wealthy landowners with storage facilities. The expected gift to the driver has risen to equal the cost of the tanker itself. Presuming that six trucks make three runs per day and the water was to make it to destination that would mean 108,000 l or less than a litre per person.

While corruption is always a controversial discussion with communities and local officials, price is not. The pricing problem is universally agreed upon. One hundred twenty thousand francs is a tremendous sum in the district, one that community members feel they can pay but with hardship. However, that works out to only 20 francs per litre. It is not enough to meet cost recovery goals. It is not even enough to pay for the petrol for the delivery, let alone considerations of infrastructure maintenance, administrative costs or infrastructure growth. Community willingness to pay testing is still pending, but it appears that 400 francs per bucket (about 26 francs per litre) will be considered close to the higher sum. There is reason to question this local perception as need drives people to pay the 24000 MGA demanded by the driver in addition to the 24000 MGA for the water. It is likely the AES can raise its prices, and it probably should, but even at double the price it would not be enough to rectify the price gap.

There are strong advocates within the AES for private vendor markets. This has in fact been tried. However, private vendor markets can only work if either (1) they can charge enough to justify the business or (2) the government subsidy is high enough to compensate for the low pricing. The population cannot afford the real cost of trucked water. Where should the money for the water come from? Some officials argue that Antananarivo should be subsidising water in southern Madagascar. However, tax-based redistribution is unlikely to work. The Malagasy tax structure is such that, even by African standards, there is high share of customs-based taxes and revenue. Household- and community-level taxes are not well collected. The capital thus does not have the resource base to subsidise water through direct tax redistribution. It would have to be from the country's meagre general funds. Private vendor markets will only exacerbate the problem. The problem here is that the delivery mechanism itself is too expensive.¹³

The AES, and more importantly the Ministry of Energy and Mines, recognises the shortcomings of this system and appears to consider it a band-aid. The primary intellectual efforts are going towards increasing community participation. Communities need to be involved in supply, facilities management and cost recovery. This is the heart of the approach used in the AES's collaboration with the World Bank and the *Projet d'Alimentation en Eau Potable et d'Assainissement en milieu Rural* (PAEPAR). The PAEPAR has a US\$ 17.3

million budget. The primary activity has been groundwater exploration. Specifically, a World Bank-funded technical advisor determines where it is most likely to find a fresh water supply and then works with the AES and the community to dig a borehole. The average cost is about US\$ 9600 per hole. Where fresh water is found a water users' group is set up in the commune to manage the borehole and ensure that community members pay for it. Price fluctuates with supply but can range from 100 francs per bucket (6 or 7 francs per litre) to 1500 francs per bucket (100 francs per litre).

Project staff report that community groups are equally problematic. Where they are parallel to the commune they are often thought of as challenging authority. Where they are merged into the commune they often lose the support of the population. Collecting maintenance fees has proven especially problematic. This local-level corruption appears associated more with the AES than with the Bank in that it permeates Bank and non-Bank-funded projects alike. In one village, for instance, the mayor appoints the water users' group. However, the group runs parallel to the commune and is not subservient to it. The population therefore cannot hold the members of the group accountable for their actions. It collects 2000 MGA per household per month for maintenance but does not actually deliver water.

The problem is the taps. The village has a pump system that circulates water to three delivery points. Obtaining water is simply a matter of opening the tap and filling a bucket. Unfortunately, the tap itself is broken. At the time of study it had not been functioning for more than a year? Why not? Surely a new tap costs less than even 1 month of what is collected monthly for maintenance. The committee says that it is the job of the AES to fix the tap. They gave the money to the AES but the AES has not done it. The AES says that no request was ever made and no money was ever paid (Figure 6).

In some ways this is a luxury problem. Of the more than 600 boreholes dug, only a small portion has yielded fresh water. Many have been dry, most have been saline. Often the latter helps stave off cattle woes, but humans do not find it fit to drink. Community leaders and some long-time expatriates chuckle at the inefficacy. Hydrological studies are wanting, but they know that communities have themselves tried to mine water for decades. The technological jump provided by the World Bank allows for flow control and more careful bores that reduce saline intrusion, but it is far from a panacea. Even the World Bank technical advisors and project leaders realise its shortcomings. The district cannot rely on groundwater.

So why dig boreholes if they are so unlikely to yield potable groundwater? A community group can manage a borehole. It is entirely within the boundaries of the commune. The World Bank will only fund projects that can result in community participation and commune-level management. Bringing water from outside of the district is thus effectively a transboundary challenge requiring management at a level above the commune. The problem is that the district is predominantly comprised of a hydrologically closed basin and the

Figure 6
Broken tap



water within the basin is largely saline—there is not enough water in the basin for the population. Either the population needs to be moved out of the basin to the water, or the water needs to be moved to it.

The question then is: ‘What method of obtaining water is cost effective for a poor population, sustainable, easily managed, and does not require significant regular economic inputs from the Capital?’ The answer is ‘a pipe’. The reticence to such an approach is well summed by Gleick¹⁴ (2003): ‘substantial, often unanticipated social, economic, and environmental costs. Tens of millions of people have been displaced from their homes by water projects over the past century’.

Gleick’s concerns are well founded. As he discusses (Gleick 2002), much of the world went through decades of trying to build its way out of its water difficulties with tremendous negative impacts on sustainability of the resource as well as the environment. Now water resources need *management*. To accomplish that efficiently, central bureaus need to give way to multi-level institutions. As demand is rising we must consider markets and pricing, efficiency and equity, to ensure sustainable water use. But this does not describe Ambovombe. Ambovombe has not been overbuilt. The understandable fears of the over-consuming west are being transferred to the south, creating an unreasonable burden on poor local populations with no physical water resource access.

A pipe requires management. Following Agrawal’s (1999) aforementioned finding with the Raika population in India, there are diverse Antandroy institutions and strategies that must be taken into account. Yet, the insightfulness of Agrawal’s findings are that while heavy-handed state-led social engineering (in this case sedentarisation) produce deleterious effects, market forces

(often embedded), social networks, geography, political boundaries, and other macro-level constraints on local decision making also need to be considered. Local organisations are well placed to take the management mantle on some things and not others, often determined by matters of scale. In the water sector Rosegrant et al. (2002) represent a consistent view fast coming to dominate the literature: community associations can be valuable but only below the turnout. Water pricing must account for larger geographic areas even as this effectively leads to price subsidies for rural areas from urban areas. Water is most cost effective by scale; even standpipes are not cost effective if they do not ensure regularised supply. As they note:

'Specification of the base rights, base charges, and efficiency prices in such a scheme will be politically difficult, but appears feasible. The establishment of base water rights would increase the political feasibility of water pricing by formalizing existing water rights, rather than being seen as an expropriation of these rights. With efficiency prices paid on only the marginal demand above or below the base right, non-punitive incentives are introduced. The reliance on water user associations to manage water "below the turnout" improves local accountability, transparency, and the flexibility of water allocation. Information costs would be reduced because local irrigators with expert knowledge of the value of water would bear the costs and generate the necessary information on the value and opportunity costs of water below major turnouts'.

It also requires a significant initial investment but the maintenance and delivery costs are low. This is not revolutionary thinking. There is in fact a 141 km pipeline in southern Madagascar, funded by the Government of Japan in 1999, that starts at the Menarandra River (near Ampotaka) goes west to the mining town of Tsihombe (district neighbouring Ambovombe to the east) and then turns south to the coast, ending at the resort village of Cap Saint Marie. Evidently, where there is an exogenous reason for investment the money is found. There are significant problems with AES's administration of the pipeline that diminishes its value. However, that is not a natural resource supply question; it is an accountability problem and an indication that either the AES needs to clean up its act or stop administering it. It still helps meet the need of the people in Ampotaka, Tsiombe, Cap Est and in between. Water delivered at station costs 10 MGA per bucket (about 0.6 MGA per litre).

There is discussion in the regional AES office, the regional Ministry of Energy and Mines office, and of course within the population that this is exactly what Ambovombe needs. Indeed, at least one study has already been conducted (concluding that it would actually be cheaper to bring water from the Manamholo River than the Mandrare even though it is three times further because its high altitude would allow for gravity pumping alone) and the AES

has its own estimates. Local officials have their own economic prognostications. In 2004, JICA embarked on a multi-year study to assess the feasibility of a pipeline to Ambovombe. At the time of writing, that report was still forthcoming. JICA's leading consideration appears to be extending the existing pipeline from Tsihombe, projecting 2015 as the year for beginning construction. The World Bank's 'Integrated Growth Pole' for the south, based in neighbouring Anosy, is predominantly concerned with development through mining. Plans for road rehabilitation in Androy appear favourable but, despite the Bank's own assessment that water is a great regional concern requiring supply development, this initiative only refers to the JICA study and not to any dedicated sectoral effort.

Why a pipeline has not been built, and appears unlikely to be built in the near term, remains unclear (despite significant efforts by the author to get to the root of the matter). Local leaders, and the AES, argue that there is not enough money. This appears unlikely given both the World Bank's efforts in the region and the current unspent funds for water in the south governed by the African Development Bank. Other responses by policy makers imply an ideological rationale: transregional pipelines are inconsistent with decentralisation efforts. Others imply a calculated power relationship. In 1901, then French Governor Joseph Gallieni asked General Hubert Lyautey to tour Madagascar to assess the needs and weaknesses of the population. Of Ambovombe he wrote: 'One walks in a full forest, but a forest of underwater dreams, a forest of trees without leaves, of large euphorbia which are named *fanitholosse*, made out of large sinister stumps...[sic] there is no water, it rains almost never' (Lyautey 1935: 133). He went on to suggest that he who controls the water controls the population. The most likely reason intimated, is that Ambovombe is just not important enough to the central government to warrant significant efforts. Unlike Tsihombe to the east and Amboasary to the west it is not a resource-rich district. There is significant racism against Antandroy rooted in pre-colonial Merina expansionism and Merina integration into French administrative efforts and this likely further marginalises Ambovombe. That Madagascar has a populist president who won every province but Tulear (where Ambovombe is situated), and Ambovombe did not support the president is not a good harbinger for the region being brought into the administrative fold.

WHAT SHOULD THE STATE-LOCAL RELATIONSHIP LOOK LIKE?

The policy direction is clearly towards management at the expense of engineering, including supply considerations such as a pipeline. Clearly the AES itself is testimony to why returning to the days of yore when centralised facilities had absolute control over funding and direction is not an option. Yet the reasons for the AES direction have less to do with the improved water delivery and environmental ethic than limiting the state's responsibility to pay for

and deliver water. The state, and specifically its department in charge of water in Ambovombe, is disengaging. That might be overstating the point as it was never engaged in the first place. In contrast to land and forest policy where the state has taken control of large tracts and increased regulation dramatically over the past decade,¹⁵ even while decentralising certain governance features to the commune level, the state is using the trend towards decentralised water management as an opportunity to reduce its responsibilities in the water sector.

A middle path first requires 'more comprehensive water policies addressing the broader array of human perceptions, meanings and values' (Burmil et al. 1999). It then requires the management and human capital *and* the state engagement and investment in delivery resources. This will serve us well in discussing what the state and the community might do if both want to ensure the supply of water in Ambovombe. First, it is necessary to ascertain community desires before giving the community responsibilities (Chambers and Conway 1992). We need to know more about the dynamics of each community—and how communities are delineated—before assigning community responsibilities. We need to know who (leadership type) the community will listen to specifically about water management, what cost recovery schemes are considered acceptable, the type of labour inputs and trade-offs a community is willing to undertake, and what the enforcement mechanisms and penalties for non-compliance are. Second, as Gleick (2002) articulates, water is different from other resources and we need to consider it as such. It is an immediate need. If a household cannot pay then it is not morally acceptable to cut it off entirely (that is why Gleick advocates block pricing for water with a large first level block). Whether a household should be cut off due to non-compliance with the rules for reasons other than ability to pay need to be addressed.

The conventional wisdom appears to be that management groups can be formed at the basin level. However, in this case the water source is outside the basin and the policy trend is to create water users groups at the commune level. Unfortunately, it may not consistently be the commune that serves as the best community-level institution. In some cases smaller units, such as the *fokontany* or hamlet, may be more appropriate. In other cases kin identities may lead to organisation that makes more sense. This is possible because the role of the community is not to manage water but to ensure accountability of the institution that is managing the resource. It is a political function. The administrative function at the community level may be in local distribution and fee collection, but the responsibility has to stop there, as one commune cannot force another to deliver water effectively.

Challenges to the decentralisation mechanism have proliferated. For instance, an independent review of community-based natural resource management, funded by the U.S. Agency for International Development, looked at 342 transfers of management and responsibility from the state to the resource user groups at the commune level, seventy-six of them in Tulear province (USAID 2004).

The study found that there were both positive and negative outcomes of the decentralisation process. For instance, some participants benefited economically, but it created economic disparities with only a fraction of society benefiting from decentralisation. There was greater recognition of resource values, but a lack of willing social organisers. There was an improvement in the integration of local rules (*dina*) and national laws,¹⁶ but social conflicts often resulted over new rules and institutional functions in accessing resources. And, there was improved government transparency but an inability to reinforce rules (especially across communes).

As water decentralisation is following in the footsteps of forest, marine and land decentralisation in Madagascar, a lot can be learned about what we may expect from the emerging water user group model. The findings in this study support a growing consensus that institutions are important; local involvement in resource management is not a panacea for resource management challenges (Campbell et al. 2001; Ostrom 2001; Poteete and Ostrom 2004). What does the review say should be done? First, increase the coherence of information in the process. That is, ensure that the state and international donors increase, not decrease, their local presence in terms of communication. Second, there should be enhanced legislation governing local finance handling as well as an increased presence of extra-commune mediation. Third, there is a governance void above the commune level that must be rectified. This requires the establishment of critical inter-institutional relationships across levels. Fourth, resource valorisation needs to be integrated into the politics of development to ensure that there is broader benefit and conservation restrictions are clearer. Fifth, greater recognition of the role of the *fokontany* and inter-*fokontany* relationships is necessary. There needs to be a mediating force that collaborates with the communes to ensure inter-*fokontany* relations over resources. Finally, there needs to be a system of evaluation of the transfer process to determine if each transfer under decentralisation is succeeding or failing and why.

The report, while not conceptually complete, provides a valuable starting place for disaggregating state-local relations. There are functions that the state is better at and functions the community is better at. What these are is still under investigation. However, some preliminary observations can be made. In the case of water, the province has little authority and less capacity. The state is clearly charged, in the Water Code, with the ultimate responsibility of meeting water needs. Thus, the state, with international assistance, is the only existing mechanism for financing regional water supply enhancement and management. In some cases the national electricity and water company, JIRAMA (*Jiro sy Rano*), can provide that function instead of the AES, but it is still a state-level function. The state, with its partners, needs to focus on modest infrastructure enhancement.

Community-level water users groups are necessary. However, their universal design needs to be revisited. In some cases 'community' may be better served at the *fokontany* or some other level. The power of the water user's

group needs to be able to vary by place in its relationship to the commune government. In some cases it may make more sense for the commune leadership itself to undertake local governance functions. Most importantly, the primary goal of local water user's groups needs to be a political, not operational, one. Operational needs are inter-district. The local population knows when there is corruption or other problems of resource governance. They need to have the authority to do something about it. To handle the responsibility of ensuring propriety of officials, as they have been handed, they need to be granted the power to censure officials who have done something wrong. At present they neither elect regional state water officers nor hold any judicial sway over them.

CONCLUSION

In the beginning of this paper I asked: How well does the state function at the community level? What is the relationship between local government and civil society? What is the role of equity of stakeholders in the decision-making process? What is the relationship between sustainability and equity in accessing the commons and how is this affected by institutional structures? The answers to these questions are somewhat provisional as the research is ongoing. Yet, it is clear that the state functions poorly at the community level. New reforms may ultimately help structure relationships across levels but for now they appear to obfuscate more than illuminate paths to successful deconcentration. The responsible agency, the AES, is under-funded, over-committed, and desperately in need of agency reform. Local government and civil society relationships are complex and marked by high variation. In some communes there is little demarcation. Civil society leaders hold office. In others, the mayor, despite being an elected official, commands little respect. In virtually all cases the relationship between community-based natural resource management institutions and the commune are fractious.

Community-based resource management institutions have benefited some people at the local level, but they have served to divide the community at the same time. In this sense stakeholder equity has worsened, not improved. Finally, it is clear that there are net winners and losers as individuals at the local level gain power through decentralisation. The institutions across scales that are seeking sustainable water resource use have undermined equity in accessing the commons even while undermining existing social norms, classes and kinship relations.

The answer is not a return to centralised management. In the case of water there was little centralised management to begin with so it would imply the creation of new centralised management. Antananarivo has shown little concern over Ambovombe. Why should it gain power to rectify Tandroy woes when it has not shown any interest in doing so in the past? The answer lies in better understanding the state-local nexus. Institutionally, the decentralisation

process requires a more clearly articulated relationship between decentralised and deconcentrated levels of governance. In the current schema responsibility is decentralised while funding is kept centralised or deconcentrated. This needs to be rationalised. The decentralisation process would be more successful if the state sought to determine what it can do best (presumably with international assistance), and what the community can do best. This is a capacity question as opposed to a question of power. In so doing it must also consider what a community is and remain open to the relative nature of communities by district, commune, *fokontany*, and kin group as determined by organic growth and historicity rather than decree from the top-down. Where understood as both instruments of organisation and institutional arrangements communities can be well placed to manage water resources within their boundaries. Yet, they have limited capacity to address the need to augment supply. Most importantly, Ambovombe's communities need to be viewed as the complex mosaic of relationships that both enhance and detract from the power of the state in a dynamic fashion. Only once the state accepts the diversity and power inherent in the community and engage it, can it hope to see a completed decentralisation process with net local gains.

Acknowledgements

This paper is part of an ongoing research project on water governance and decentralization in Madagascar and Kenya. In 2002, I returned to the area for the first time since my (1997-1998) dissertation fieldwork. The goal was to home in on the key concerns of community members apparent in my earlier work. In 2002, 2004 and 2005 I conducted interviews with local leaders and focus groups in all but two of the district communes, and in 2005 I conducted a district-wide survey ($n = 521$) stratified by commune and *fokontany*. In 2004 and 2006 I interviewed water sector leaders in government, non-government organizations and donor organizations. Research funds were provided by Yale University and The University of Alabama in Huntsville faculty development grants. These were sufficient to also fund the fieldwork for a doctoral student in Anthropology from the University of Tular, Emeline Anjarantena, whose 6 months of fieldwork in 2005 on changing patterns of household decision making in Ambovombe contributed to my thinking on this subject.

Notes

1. Data from the 2001 ILO census project (<http://www.ilo.cornell.edu>), joint conducted by Cornell University and Pact International, is used here. ILO used an index with a 1-6 score to indicate levels of development. Tolagnaro communes varied, but commonly ranked a 2 or 3. Amboasary communes commonly ranked a 5.
2. ILO data, 2001. This is consistent with findings by the author in Amboasary (2000) and by Isabelle Droy (1991) in Ambovombe.

3. While interviews with non-government organisations in this study, and comparing funding levels, demonstrate that water dominates the development agenda in Ambovombe, this point is made more systematically by ILO in its 2001 survey and summary of development priorities.
4. Regularised water supply and delivery is key to reducing costs. This is commonly called a problem of the price spiral (UNDP 2006). It has been broadly noted that the informal water sourcing common to the poor (such as trucks, standpipes and wells) is highly inefficient and lead to a cost of water many times greater for the consumer than piped water (Bhatia and Falkenmark 1993; Collignon and Vézina. 2000; Olmstead 2003; UNDP 2006).
5. I borrow the terminology here from Elinor Ostrom (1999).
6. This view on water governance is consistent with views expressed more broadly about decentralisation; decentralisation is thought to bring about improved accountability (Ribot 2002), civic engagement (World Bank 2000) and equity (Maro 1990).
7. His view that the World Bank is not further considering the role of the state or the fracturing the approach has created is well supported. Since 2003, the World Bank Poverty Reduction Strategy for Madagascar has clearly stated that a participatory approach will be used in all projects; similarly, the US\$ 50 million in supplemental development funds for Madagascar signed on 6 June 2004 states: 'In keeping with the principles and modus operandi of FID, the proposed Supplemental Credit would be implemented with maximum community involvement in all phases of the project cycle, including maintenance of infrastructure investments. Identification of sub-projects to be rehabilitated or reconstructed is based on FID's damage assessment that was completed in cooperation with communes. Provisions have also been made to involve communities as much as possible during implementation, wherever capacity exists'.
8. A constitutional referendum was held in Madagascar in April 2007. The proposed changes included a recognition of the *fokontany*—the level of governance below the commune level and the most local level—in the preamble ('Understanding that the Fokonolona, organised in Fokontany, constitute a forum for exchange and of participatory dialogue of the citizens...') and the insertion of Article 138 (The decentralised territorial collectivities of the Republic are the regions and the communes. The creation and the delimitation of the decentralised territorial collectivities must respond to criteria of geographic, economic, social, and cultural homogeneity. They are decided by law. The denomination of each decentralised territorial collectivity can be modified by decree of the Council of Ministers after consultation with the concerned regional authorities...). While this serves to legitimise the system of regions created by President Marc Ravalomanana in 2004, and solidify the accountability of the commune to the region, it also introduces some question about definition of the commune (which often transcends lines of homogeneity) and the power of reciprocity enconced in the role of the *fokontany*.
9. The idea of 'capture' here is specifically related to peasant economies; Goran Hyden (1980) discusses the 'uncaptured peasantry' as being beyond the state's primary ability to tax and perform other basic functions.
10. Borrowing the ILO data set that divides income into classes for each commune, there is high variation between communes at each class level (wealthy = 4.89, mid-level = 88.533 and poor = 102.667). Perhaps more critically, there are great class cleavages ($F = 377.94$, $SS = 49408.04$, $DF = 2$). Note that ILO defines classes relatively with 'wealthy' being those who never face malnutrition, mid-level as those who suffer from food security part of the year most years and all of the year only in bad years, and poor as those who suffer from food insecurity every season. In all but one commune, the majority are in the second category. In the one commune, Ambohimalaza, the largest numbers of people are 'poor'.
11. The water for the filling station actually comes from the underground flow of the river, not the surface water.
12. Officially ten were still in operation, but six seem to actually exist.

13. In an interesting study of seventeen cases in the developing world Bhatia and Falkenmark (1993) found that water truck delivery costs to be higher than infrastructure delivery methods. The difference in cost varied widely—water truck delivery costs varied between five to eighty-three times infrastructure delivery costs—but was always significant. Olmstead (2003) comes to a similar conclusion in the US asserting that privatisation of water markets can be favourable, but through municipal infrastructure.
14. The sentiment is echoed by the World Bank in such publications as Saleth (1999).
15. Forest and land nationalisation is part of the National Environmental Action Plan. On one level it is a valid attempt to protect valuable, threatened ecosystems. On another level, it is an attempt by the state to increase power and holdings for its own gain (Scott 1999). Without entering into the debate about whether the creation of parks and protected areas is necessarily a responsible and viable form of environmental protection, the limited efforts of the state to protect the resources under its control (as opposed to its efforts to control it) bring its policies to date into question (Kull 2004, Marcus 2001, Gezon 1997). It is unclear if the administration of Marc Ravalomanana and/or the third phase of the Environment Programme will ameliorate this finding.
16. The integration of local *dina* and national law has been a challenge for nearly a decade. See Kull (2004), Galvan and Marcus (2003), Henkels (1999) and Razanabahiny (1995).

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