

Within, and Beyond, Territories

A Comparison of Village Land-Use Management and Livelihood Diversification in Burkina Faso and Southwest Niger¹

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Introduction

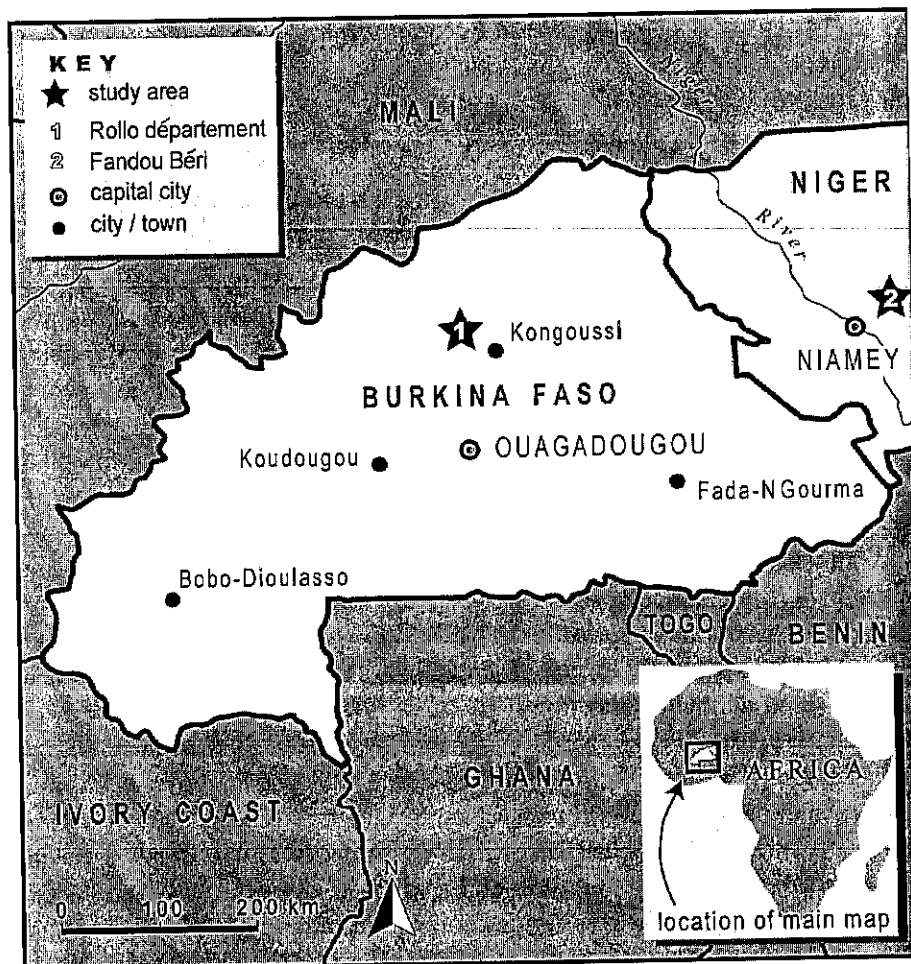
A common response to scarcity among the peoples of dryland West Africa is to diversify their livelihoods by responding to, and exploiting, new opportunities for income generation. This is achieved economically, socially and politically, and requires great flexibility (Batterbury and Baro 2005). The arrival of significant international development finance in the dryland Sahel region following the major drought emergencies of the 1970s and the funding of projects initiated by states and international donors offered new opportunities to rural people. But these opportunities were far from straightforward. Development aid, like Sahelian rainfall, can be fickle. It can dry up, becoming desiccated by disputes with donors, changing aid priorities in the donor countries, local conflicts or economic collapse and instability. Some development interventions were short lived, while others have endured as long-term programmes.

Sahelian people are opportunists. They have become skilled at using development interventions as part of the pool of assets and opportunities upon which they can draw. This chapter contrasts two cases in which the 'presence' and 'loss' of international development project assistance in the rural Sahel has had impacts on livelihood strategies. On the Central Plateau of Burkina Faso a range of initiatives termed 'village land-use management' have been taking place since the 1980s, offering sometimes lucrative assistance for 'territorial' land improvement at the scale of villages and communities. By contrast, in southwest Niger, Zarma farmers responded to that country's national political and economic crises and 'loss' of different varieties of rural development funding in the 1980s and 1990s by redoubling their efforts at livelihood diversification (for locations, see Map). Close analysis of these two cases using a political ecology framework reveals that development-induced community resource management in Burkina Faso and di-

1. I would like to thank the organizers of the 'Beyond Scarcity' conference in 2002, IDS at Roskilde University, the SSRC in New York for supporting the Burkina Faso study with an African Agriculture and Health fellowship 1991-4, the LSE for supporting fieldwork in 2001, and the British ESRC's Global Environmental Change Programme for funding the work in Niger from 1996 to 1999. The latter was a collaborative effort involving many individuals, in particular Professor Andrew Warren.

verification 'away' from territories and across different livelihood possibilities in Niger are actually two sides of the same coin. Underlying both scenarios, we find innovative responses to scarcity by local people, and the incorporation of new assets and opportunities in livelihood decisions.

Map 1: Fieldwork locations (drawn by Fatima Basic)



2. The Political Ecology of Scarcity

Farming systems and pastoralism in Africa have often been the focus of neo-Malthusian arguments that highlight population growth and land shortages as the driving forces behind scarcity (Jones 1999). The Danish economist Esther Boserup's famous retort to neo-Malthusianism was to demonstrate how population pressure, far from creating scarcity and human misery, actually seeds human innovation, hard work and technological change (Boserup 1965). Some empirical

studies support her general proposition (Tiffen et al. 1994), although its applicability to more marginal and resource-poor regions has been questioned, and the treatment of social issues and the political economy of agriculture in her formulation was superficial at best (Stone 2001). A more nuanced and realistic picture of population-resource relationships in the African drylands goes well beyond Boserup and Malthus by accepting the contingency of the relationship and the influence of other important variables upon it (Stone 2001, Mortimore this volume). These include the extent to which markets act as 'benign' sources of rural transformation that are capable of mediating resources and population through the purchase and sale of productive assets and technologies (Mortimore and Adams 2001: 51), and recognizing the vital role played by spatial strategies, like the temporary migration of household members to accumulate capital or for settlement, in order to help sustain individuals and the communities to which they belong (Rain 1999, Raynaut 2001). People and goods travel across porous territorial boundaries, and neither Malthus nor Boserup devoted sufficient attention to the scale of these flows. In addition, more radical interpretations of the plight of African rural people and their environments privilege the role of external political and economic agents in determining the population-resource relationship, for example by introducing locally disadvantageous terms of trade for commodity production, or creating conditions of instability or violence in which local resource-management systems break down or are destroyed completely. Clearly, examples of land-grabs by urban elites or the deliberate and cynical perpetuation of instability for political reasons (Keen 1998; Manger, this volume) take us well beyond the rather simplistic and universalistic claims made by both neo-Malthusian arguments and their cornucopian antidotes.

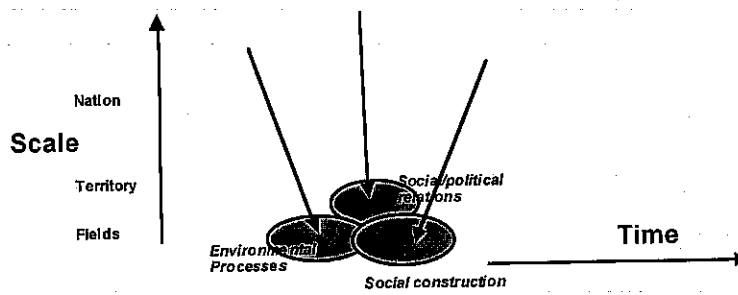
These different analytical perspectives inform many studies of the political ecology of land use and livelihood systems in Africa. Twenty years ago, building on a rich tradition of agrarian studies, Piers Blaikie recognized that struggles over natural resources at the local level need to be analyzed as part of a nested 'chain' of processes at different scales, rather than in isolation (Blaikie 1985). Field-level soil erosion might have its roots in agrarian social relations, national agricultural policy, and even the workings of international commodity markets. While 'political ecology' initially suggests that this scaled analysis attends to a binary set of explanatory variables — politics *and* ecology¹ — in my view, a threefold framework offers greater explanatory power. If we conceive of the drivers of change in any locality as being some combination of biophysical, social/political and 'socially constructed' (in simple terms, what people believe about a phenomenon, and how they act on that belief); and if we then add scale and time dimensions to all three, the political ecology framework becomes a useful starting point for discus-

1. Since its early roots were in political economy, political ecology had an understandable emphasis on political processes and power dynamics in some of its early variants, with less of a focus on environmental forces. Bryant (1997) still argues for such an approach.

sions of land-based livelihood systems (Figure 1). Political ecology has an intellectual and an analytical appeal because there is an explicit recognition of factors that are external to territory or communities, as well as significant attention to local environments and human agency, in the three domains. Less interdisciplinary approaches to rural systems, like agricultural economics, have not examined their subject matter in such a 'rich' fashion as this.

Figure 1. A three-fold approach to political ecology

- Processes act upon a place in three realms:
- Environmental processes
 - Social and political relations
 - Social construction and meaning



Although there is much more to political ecology than this brief sketch suggests, it too has its limitations. The approach may be used to explain everything from field-level soil erosion to international conservation policies (see Robbins 2004, Zimmerer and Bassett, 2003, Paulson et al. 2003, Peet and Watts 2004). But most of the authors that advocate it are concerned with the transformation of nature into some type of productive asset, such as food, timber or forage grasses, or the ways in which these are conserved by a variety of actors and institutions. Political ecologists can be rather poor at explaining some of the cultural variables alluded to in the introduction to this book. Ethnographic accounts demonstrate very clearly that struggles for land and other material resources may not be driven by instrumental/material concerns and that they cannot be analytically reduced to material necessity or greed alone. Religious ideologies or disputes, kinship feuds, ethnic tensions and culturally significant differences in 'world-views' also play a role. Christian Lund's work in Bawku, Ghana (2003) shows this clearly. A variety of recent conflicts in the town, including several over land, have been sparked by minor incidents or casual insults, before escalating into ethnic contests and even serious violence. These conflicts are actually about deep seated ethnic tensions between rival ethnic groups going back decades, and do not originate in resource scarcity. Michael Watts's work in the oil production region of the Niger

Delta in Nigeria (2001) shows how corporations and the Nigerian state stand to benefit from oil production, while the local Ogoni people protest against their marginalization from the benefits of 'black gold' and the destruction of local habitats in its extraction. But their struggle is as much about ethnic *identity* as it is about oil wealth, and these identities are themselves diverse. A simplistic analysis that pits locals against the predatory state misses the complex political allegiances and identities of the region. The lesson here is that grievance as well as greed – terms usually restricted to the analysis of complex emergencies and warfare (Keen 1998) – may also underlie more mundane struggles over access to resources.

In the rural Sahel everyday resource struggles are common, but the region (luckily, perhaps!) lacks the lucrative and abundant high-value resources present in regions like eastern Congo and southern Sudan (Fairhead, this volume; Manger, this volume). Thus in the Sahel, it is the scarcity of productive resources, as well as great environmental risks, that provide the context for the entry of development aid. Any external actors in the rural Sahel, such as government agents and development projects, are 'enlisted' in the livelihoods of rural land managers and become part of the set of assets upon which local people may draw (Raynaut 2001). Socially constructed notions of risk and opportunity and material or financial gains from everyday livelihood strategies are nested within the cultural and social frameworks of agrarian society, community norms and ethnic allegiances.

Making a living in the rural Sahel can be a tough business. Since the great droughts the 1970s, which generated substantial international aid and many urgent efforts to make Sahelian systems less vulnerable to climatic perturbations, local livelihood systems have featured strongly in the language and programmes of development agencies. Not all the region has been touched by their activities of course: northern Nigeria and Chad have seen little development project aid, and many agencies withdrew temporarily from Burkina Faso in the 1980s and from Niger in the 1990s. Aid tended to be guided by analytical frameworks that were alien to the local region. In the language of neoclassical economics associated with Robert Solow and others (Neumayer 1999), for example, a local production system practising 'strong sustainability' meets many of its food requirements from the immediate territory, and resource depletion can be avoided through careful land management. Some policy-makers, especially those with a scientific training, do believe that this is the aim of sustainable Sahelian development, namely that spatially fixed communities should preserve their 'natural capital' for future generations (Moore 2001, Warren, Batterbury & Osbahr 2001b). Yet this is very unrealistic in the region, given the pattern of movement and exchange that Sahelian people have enjoyed for centuries and the paucity of local resources (Raynaut 1997).

A more realistic way of viewing Sahelian livelihoods is to see them as 'weakly' sustainable, acknowledging that communities have labour power, skills and social networks to diversify away from reliance on local natural capital (Warren, Batter-

bury and Osbahr, 2001a). The livelihoods framework, developed as an analytical device for rural development interventions, including those of CARE (a large international NGO) and the British aid agency, DfID, is one analytical approach to research and policy that follows this logic. The trick for policymakers becomes how best to support the different components of a livelihood system such that natural, human or 'social' capital is not exhausted beyond repair (Carney 1998, Bryceson 1999). This livelihoods approach has proved a useful, if sometimes frustrating tool for agencies that now look well beyond agriculture alone when offering support to Sahelian peoples. It is recognized that people migrate; that soil may occasionally be left to erode when there are labour shortages; and that households must make complex decisions that may not always accord with a western notion of 'environmental sustainability'.

This shift in development thinking is welcome. Even ten years ago, many development interventions in dryland Africa were, and in some cases still are, driven by scarcity arguments (Gausset and Whyte, this volume). For example, innumerable project documents in Burkina Faso produced by the international agencies in the 1980s talked of worsening land-degradation problems, frequently arguing that 'the poor' degraded their own resources (Moore 2001).

The analytical gaze of political ecology, focused on the different components of livelihoods, leads us towards the identification of processes that may lead to resource degradation or significant resource conflicts at different scales. This could direct us towards regional climatic changes, to the actions of a national environmental ministry, a World Bank office, or a less-than-efficient and honest local government department. How do such decisions impact upon particular places? Carefully practised, political ecology presents an explanatory 'chain', with a historical and a spatial reach. What such 'nested' stories tell us is important. In the Sahel, we know that, despite the incipient globalization of production and consumption, local rural territories matter, especially as places where people obtain at least part of their living, make their homes and originate their beliefs. I shall now explore two cases where such local territories still figure strongly in more diverse livelihood systems, despite the linkages of these places to other scales and places.

3. Development on the Central Plateau, Burkina Faso

The *gestion des terroirs villageois* (GTV, or village land-use management) approach to natural resource management emerged in the late 1980s, in the francophone countries of West Africa, including Burkina Faso and Mali (Batterbury 1998, Engberg-Pedersen 2002). This approach had its roots in numerous community forestry initiatives and local soil conservation projects in the region (see Atampugre 1993, 1997, Toulmin 1994) and was developed and tested by agencies including UNDP, Plan International, CARE and GTZ (German bilateral aid). Its more distant academic origins may be found in the work of francophone geographers

working to define and categorize rural *systèmes agraires* back in the 1960s. In Burkina Faso, the individuals who were important in its elaboration and implementation included several expatriate researchers with a long record of residence and service in the region, as well as young Burkinabe government *fonctionnaires*, several of them with a training in geography in France or at the University of Ouagadougou. The aim of GTV is to assist local communities to delimit, and then assume greater responsibility for, the fate of bounded units (*terroirs*), over which they hold land rights, and to manage their own natural resources in these *terroirs*. The first step is to for villagers and extension agents to delimit and map village lands, soil quality, land uses, water bodies etc., using aerial photographs and sketch-maps. This is generally done in participatory meetings with the members of a single community. A committee formed by the village will then propose and implement a plan for the rehabilitation of eroded pastures and fields, using cheap and appropriate conservation measures. The development project supplies the necessary technical assistance and transport to enable soil conservation, tree planting and so on to progress, while the village committee organizes labour for these activities and draws up a programme of works. Eventually, the project is no longer needed, and responsibility passes to the village to maintain its natural resources in this way.

This strategy, of which I have given a simplified description here, has evolved over almost twenty years to become an established sub-component of the Burkinabe Ministry of Agriculture, with a national programme and multi-million dollar funding from the World Bank (the PNGT, now in its second phase). The early days of GTV programmes generated considerable excitement in Burkina Faso, which welcomed the arrival of a participatory, locally based approach to environmental management. It was in marked contrast to the hierarchically organized world of francophone West African development and government bureaucracies, and GTV was popular in rural areas and achieved results. It made perfect sense in the post-drought Sahel of the late 1980s to turn over land management to local people, after decades of authoritarian regimes and a dysfunctional state bureaucracy. The prevailing discourse in rural development circles was all about 'local sustainability' and 'self-help'.

I worked with one of the largest GTV projects on the Central Plateau of Burkina Faso, PATECORE, from 1992–3, and I also revisited the region in 2001. By the late 1990s this project was operating in 240 communities, and the German project officers were working with local government in several of the provinces that make up the Central Plateau, applying the *terroirs* approach to conserve soils through *diguettes* (low contour stone lines), small dams and other methods, and the afforestation of degraded common areas. Participation in many communities was high. People turned out in large numbers to load up Mercedes trucks with stones and to transport them to their *terroirs* to construct *diguettes* to slow the run-off from the heavy summer rains (Figure 2).

Figure 2. Participation in the construction of *diguettes* in the village of Ibi Palaga, Bam Province, Burkina Faso, 1992. Photo: author.



In the late 1990s concerns were addressed, by myself among others, that the GTV approach had become a 'second best' form of community development and therefore needed some additional thought (Batterbury 1998; cf. Nielsen 1999). The gender dimensions of conservation were certainly overlooked in the early days. Mossi women did most of the backbreaking work of hauling rocks and constructing *diguettes*, often for less reward than men, since they lacked formal land rights and thus could not harvest their crops on the land they were rehabilitating. This, and the tendency to treat target villages and communities as 'black boxes' for the GTV interventions, thus ignoring social issues, has been noted (Kahrman 1997; Nielsen 1999; Engberg-Pedersen 2002). Commentators agreed that some projects gave insufficient attention to social complexities. For example, the fact that the 'participants' in conservation were not necessarily the same as the 'beneficiaries' was overlooked, as was the fact that Mossi peoples operate heterogeneous livelihood systems on multiple farm plots on different soil types and with significant incomes from non-agricultural activities. This meant that some were not aided by the project at all (Mazzucato and Niemeijer 2000). Most importantly, could such an approach be draped over a complex system of existing land-tenure rights, and would pastoral peoples, who had no such stake in local territories and usually lacked such rights, be disadvantaged thereby (Painter et al. 1994)?

Over the last ten years, the approach has changed and morphed to accommodate some of these concerns. It works quite well in settled agricultural communities with relatively secure land rights and few power struggles, and PATECORE, although it is faced with the possibility of closure in 2004, has notched up an im-

pressive fifteen years of continued operation, still maintaining a largely Burkinabe staff, with support from GTZ and a small number of German expatriates and volunteers. Its work has been given renewed credibility by Chris Reij, the Dutch doyen of the *diguette* in Burkina Faso, in a recent study of the changes in land use resulting from conservation efforts. The landscape of Bam Province and surrounding areas has been re-vegetated and 'greened', partly as a result of project *diguettes* that have rehabilitated large areas and brought them back into productive use (Reij et al. 2004).

However, this type of localized, populist, but ultimately rather flawed development intervention had a 'hidden transcript' (Scott 1985). Internal village disputes were set aside when German film crews came to in town. Visitors were presented with a united front, with serious conflicts tucked away from view (Barterbury 1997; Kahrman 1997). The visible, tangible image of *diguettes* was persuasive: the dominant 'social construction' was that they increased millet productivity and were willingly built by cooperative groups of Mossi farmers. These images were widely aired (Nielsen 1999). However, researchers were more sceptical than the film crews and reporters. Assessing the veracity of these images required a political ecology investigation. In accordance with my threefold framework, a trilogy of concerns needed to be addressed, as follows:

a) *Do diguettes really conserve soils, and really augment crop yields?*

It was found that they did conserve soil against heavy summer run-off, and did augment yields for several years, but that the results depended on soil type and rainfall.

b) *How do labour, decision-making, and gender politics play out in this interesting form of agricultural intensification?*

As already noted, what emerged was that women worked more in building *diguettes* (Barterbury 1998). Whether an individual benefited from a *diguette* built with group labour depended on whose fields it passed through. Many men were absent from the village when the structures were completed in the dry season. Existing disputes over chieftaincy arrangements and land access continued during communal conservation work, which might aggravate them.

c) *How did the hermeneutics of soil conservation circulate and have real effects on project activities, and on the landscape? With so many 'actors' now involved in rural communities, including project workers and extension agents, how was development actually achieved across the 'actor interfaces' between these human agents (Long 1992)? What were they all thinking?*

It was found that technical knowledge and discourses flowed between villages, and project and government offices, in interesting ways. For example, some of the less experienced expatriates and project staff were keen to conserve natural resources, buying into the scarcity discourse, but nonetheless realizing there were other stories that they were never going to know about, particularly those con-

cerning local conflict and inequality. The Burkinabe counterparts in the project and the ministries understood more about local politics and had less interest in tackling land degradation in conflictual situations, and they sometimes demonstrated less faith in Burkinabe 'people power' to get things done against the odds. Villagers had the most interesting approach to conservation, frequently viewing it as a way to obtain other benefits, unrelated to resource management. I shall address the last point in a little more detail.

The PATECORE project has had a very real effect on many aspects of village life: new management committees had to be formed, people were summoned to frequent meetings, there were new communal activities to be undertaken, and new agricultural techniques were developed in association with the village conservation plans. People learned to identify degradation patterns and their own plots on aerial photographs and to develop their own village maps and diagramming techniques. These seemed to work remarkably well, and in the two communities in which I conducted ethnographic research and surveys (near Rollo in Bam Province), land was actually conserved in a broadly consensual way. There were also major problems where pastoralists, who lacked land rights or much social status, co-existed close to the settled Mossi landowners. There was, in addition, a culture of dependence on foreign aid that had been created among the local government cadres with which PATECORE worked. This issue persists to the present day.

Yet this was not a case of wholly inappropriate, western-dominated development. On the Central Plateau, the 'scarcity narrative' did not reach the draconian heights noted by the famous study of deforestation conducted in Guinea by James Fairhead and Melissa Leach (Fairhead and Leach 1996). After a few years of pilot operations, by the mid 1990s PATECORE had a team of intelligent and thoughtful development expatriates who worked well with equally professional government officers, several from the local area who were trained in techniques like aerial photograph analysis, project logistics, soil science, and so forth (Batterbury 1998). *Diguettes* grew in scale and length, and the staff learned much about their environmental and social impacts. Had the anti-development critic James Ferguson (1990) visited the project at its height, he might have been just a little less cynical about western-led development! The respected anthropologist Sally Falk Moore actually did visit several times in the mid 1990s, and offered critical assessments of PATECORE's work, but I think she ignores some of the local success stories I witnessed (Moore 2001).

There is an important twist to the standard arguments of both the neo-Malthusians and their critics. Both groups tend towards a 'productivist' or materialist analysis, and they make a deterministic link between demographic change, livelihood systems, and natural resources. What I discovered, however, was that participation in natural resource management had major *symbolic* value, creating 'symbolic capital' for a community, to use Bourdieu's terms (1977). Mossi villagers were not duped into contributing their labour to project activities unwitting-

ly, simply because they were told to do so by the village chief or his elders. Nor were they entirely convinced by the productivist argument that *diguettes* improved crop yields, until they could experience this themselves. In the village of Toessin, 'participation' in resource conservation was put on display to the local state, visiting officials, the extension service and other donors. This reaped other material rewards for the community.

This last point is the crux of my argument. Having observed the vigorous participation of this community in project activities in the early 1990s, I returned there eight years later in 2001. The village was still, by and large, poor. Many males still migrated for work to Côte D'Ivoire or to the cities. An extensive network of *diguettes*, built with project assistance, criss-crossed the agricultural land over which villagers held long-term rights. Most importantly, though, the village had a new primary school. Nearby, in the small hamlet of Ibi Palaga, a poor community that had also worked with PATECORE for a number of years, I found a new well, costing thousands of dollars. These were just two of the material gains from the socially constructed vision of harmony, participation and hard work that the villagers had been able to maintain in earlier years. Symbolic capital was, literally, transformed into concrete. Toessin villagers had successfully created the image of a hard-working and unified village, ready and willing to work with outside agencies and projects (Batterbury 1998). Primary schools cost more than *diguettes* and they need staff, who need houses and food. Because Toessin was very widely praised for its natural resource management work, this image stood the village in good stead when it came to convincing the local government that it, not neighbouring communities, should receive a new school.

Yet Toessin is rife with conflicts and consuming jealousies, linked in part to a longstanding dispute with a neighbouring community, Kiella, over land rights and previous perceived injustices. The point is that Toessin obtained the school, while nearby villages, which built no *diguettes* and had few links to external projects, did not. Development requires a sales job (Biershenk et al. 2000; Laurent 1996). When one talks of supporting livelihood security and locally appropriate forms of development, the appropriation of such benefits should form part of our analytical and practical interest in how rural communities 'get by' and 'get on' (Ellis 2000). They are also part of the population-environment relationship that Malthus and Boserup addressed, yet they go unnoticed in that literature. Symbolic capital leads to material outcomes. And the material outcome – the *diguettes* – also allow symbolic capital to grow.

A new phase of ill-conceived and much-debated territorial development is starting in Burkina Faso, which makes these local stories relevant to current policymaking. This is the creation over the next few years of rural municipalities that will probably amalgamate together groups of at least 5000 citizens, usually spread among several villages, to act as fiscal and political units. Decentralization is following the Senegalese and Malian model and is likely to lead to the same problems of scale and governance as in those countries (Ribot 2002). If village

communities have difficulties reaching consensus over the management of common resources like wells, lakes and forest groves at the present time, and are busy seeking new development benefits, then the problems will be magnified when their grievances have to be taken to an elected council representing several communities. Creating new local decentralized councils and municipalities will potentially create an absence of downward accountability to villages and their members (Ribot 2002).¹

Development Marches Out: Farmers Diversify in Southwest Niger

Deteriorating economic conditions require households to construct livelihoods from a medley of different resources and activities, throwing into question the material basis of household construction and maintenance, as well as power relations within households.
Liz Francis (2000)

My second example, in southwest Niger, traces a very different socioeconomic trajectory. Political security, economic prosperity and international development donors have at certain times been absent from parts of the Sahel. Such was the fate of parts of Niger in the late 1980s and 1990s. Niger shares a border with Burkina Faso, but while the latter was courting international donors, privatizing state assets and attracting large World Bank loans, Niger was experiencing two military coups, the loss of several important aid donors, the almost complete shutdown of the rural education and extension systems, the continuing effects of the loss of uranium revenues due to falling demand and foreign competition from Australia, a falling GDP, and great uncertainty over land rights, health provision, taxation and other issues. These processes were very evident in the village of Fandou Béri in southwest Niger, which is in the hinterland of Niamey, the capital city. Since 1989, rural 'development' had truly become to be a matter of self-help rather than assistance from external agencies or the state. The last international project to have a real impact in the village and many of those surrounding it, a seed-supply scheme, folded at that time when the economic downturn kicked in. The regional matrix of supporting institutions, like the extension service and the village school, also ceased to function.

The story here is complex and has been set out in several papers (Batterbury 2001; Osbahr and Allen 2003; Warren et al. 2001 a, b; Warren et al. 2002). It begins in pre-colonial times, with the establishment of agrarian communities like Fandou Béri on a region called the Zarma Plateau in the 1800s. By the 1980s Zarma farmers were making a continuous series of efforts to ensure basic subsistence and household needs, both symbolic and material. The region has a lower population density, less investment and poorer soil fertility than the Central Pla-

1. In Toessin, the village fears it will lose the small revenue it obtains from charging Fulani herders to water their animals at a lake that the villagers maintain if that money is now passed upwards to a newly established municipality.

teau of Burkina Faso (Osbahe and Allen 2003). Modern-day livelihood strategies consisted of an increase in male out-migration to northern Côte D'Ivoire (where men work selling cloth), increased livestock ownership by agriculturalists and business activities like trading in the local region, selling firewood for consumption in Niamey, labouring for cash, and so on.

By combining social and environmental data in a 'local political ecology' project, our research team was able to claim that household livelihood decisions actually have visible landscape effects (i.e. on biodiversity and erosion levels), and that these were very different from those described above for Burkina Faso. Households whose male members migrated to find work rather than remaining during the farming season tended to downplay agricultural sustainability, since labour became unavailable on the fields in the very season when wind erosion on exposed soils was at it strongest. We were able to quantify erosion trends over thirty years using CS¹³⁷ measurements, and to link this to basic variables describing the household livelihood system and its evolution over the same period. Figure 3 gives data for just two households out of sixteen that were analyzed over a one-year period, showing the difference in net productive assets and the extent of livelihood activities for them. Both produced less grain than they needed from eroded fields, but both made up for this through other livelihood activities.

Figure 3. Diverse income sources in two households, Fandou Béri, Niger, 1997

Household number	Millet Harvest (bottes, a local grain measure)	Annual grain requirements (bottes)	Soil loss measured using caesium 137 analysis for main field (t ha ⁻¹ yr ⁻¹)	Annual household income (CFA)	Annual household expenditure (CFA)	Balance of previous two columns (CFA)	Animal ownership (TLUs)	No. of long-term migrants in household	Total household size	Local trading?	Household status
6	178	250	37.66	375,875	246,700	+129,175	13	1	8	N (but income includes private firewood sales)	Wife is a prominent entrepreneur
1	146	300	41.09	179,425	188,650	+9,225	2	0	12	son	Some political influence

Source: Batterbury 2001. In 1997, US\$1 = 625 CFA (approx).

Reading a range of 'signals' in the landscape and soils, we discovered that this village has far higher rates of net erosion on its agricultural lands than the scientific literature on the Sahel predicted. We also noted a trend towards the household atomization of production units and cross-community institutions over a thirty-year period, which had accompanied population growth to about 20 persons/km². Mechanical soil-conservation techniques, like the *diguettes* of Burkina Faso, were absent. The presence of sandy soils, together with the economic choices made by farmers to diversify production, meant that economic sustainability rose above environmental sustainability in everyday decision-making and time horizons. Figure 4 shows land-use change in the village territory and highlights the aggregate loss of non-cultivated land since the 1950s (scrub/bush land reduced as

farmed or fallow land grew in extent). Households without much labour to invest in agriculture were busy elsewhere and thus suffered more erosion on their primary fields. We argue, therefore, that 'erosion is the consequence of decisions to invest or re-invest in the management of particular fields at particular times' (Warren et al. 2001b: 89). Erosion is not just a function of net population density, or of population growth. Density and growth were relatively low, yet erosion was visible and sometimes severe.

Figure 4. Land use and cover change of village terroir, Fandou Béri, 1950–1992

Land use category	% of the 35 km ² Fandou Béri terroir 1950	1992
Scrub/bush	76.3	34.1
Tiger bush*	4.7	4.1
Current fields	11.3	23.4
Recent fallows	4.1	27.4
Older, detectable fallows	3.5	10.9
Settlement	0.1	0.1
Total	100.0	100.0

Source: Aerial photograph interpretation and ground-truthing, 1996

* Characteristic linear vegetation bands, found on plateaux.

In Fandou Béri, then, a form of 'sensible' or 'weak' sustainability seemed to offer the best option to the local community (Warren et al. 2001). Out-migration and non-agricultural activity offers essential income and livelihood possibilities in communities like this that are distant from economic opportunity. This finding is shared by other studies in West Africa, particularly in Mike Mortimore's extensive investigations in dryland Nigeria (Mortimore and Adams 1999; Mortimore, this volume). Regions like the Zarma Plateau have a median population density and few opportunities to intensify agricultural production for profit, and do not show the positive relationship between land use intensification and soil quality that is emerging in the Burkina Faso case discussed above. The Boserup hypothesis is not rejected just because population growth has created livelihood diversification rather than in-situ intensification of production, but our study did reinforce the notion that intensification is not always the norm. Intensification of production can be hastened by development project activity (as in Burkina), but this is unusual in some Sahelian contexts.

With no effective local government presence and no development projects or NGOs working in the community any more, the type of performativity and generation of 'symbolic capital' that I witnessed in Burkina Faso had a much smaller audience in Fandou Béri (except, perhaps, our small research team for a couple of years!). Given the nature of its livelihood system, the village has less need for communal activity and labour-sharing arrangements, and it did not need to conceal inter-household differences and disputes from outsiders somehow in quite

the same way (see Kelley 2002, who worked in the same village). The lack of external agencies operating in the region meant that Zarma farmers have fewer 'symbolic' reasons to nurture their cross-community institutions in order to attract future benefits. In Burkina Faso, by contrast, the decision to participate in conservation was effectively subsidized by PATECORE, and it took on greater meaning and importance there. Fandou Béri did, however, construct one project together as a village: it built a relatively costly mosque out of bricks and concrete in 1997–8, using migrant and extended household remittances. But this was not accomplished with development project assistance.

Village territory in Fandou Béri is quite well defined except at the margins of the village lands, and much land is loaned out or in temporary use, which blurs its territorial boundaries (Kelley 2002). But as I have noted above – and just as in Burkina Faso – it is possible to read the effects of livelihood activities in the landscape: for example all households farmed or raised livestock that were entrusted to and grazed in this territory and further afield. Some of the village territory had prohibitions on grazing. There were established areas of protected bush, high on the plateaux. 'Grievance' could be read in the landscape too, for example, in the exaggeration of field boundaries in areas of disputed tenure, or the spatial disposition of different sub-groups in village *quartiers*. Fulani, the resident agro-pastoralists, had extremely high manure inputs on the small amount of land they were permitted to use, but this was of necessity – they were denied land rights by the Zarma, and had to intensify production on their loaned plots. 'Greed' was visible in the activities of a recalcitrant and opportunistic chief, although in this case Islamic codes diluted the effects of his attachment to rent-seeking and land control (Batterbury 2001).

The point here is that in this case in Niger, the locality, land, and the finitude of local resources all mattered hugely to village residents. While diversification of household activities was pronounced, as might be expected in this post-development economy with so few choices available to rural residents, everybody farmed when they were at home, while simultaneously having household members earning cash 'outside' the village. The community should be seen as an extended network of social relationships, but one that is firmly anchored to the village territory. Territories still matter, even when migration is extensive.

5. Conclusion: Tracing Impacts and Analyzing Scarcity Arguments

There are commonalities and differences between these two cases, which the threefold political-ecology model helps to illuminate.

Empirical assessment in these two studies was carried out in three broad realms: accounting for the role of biophysical change, particularly the quality of land-based resources, the effects of *diguettes* and soil erosion; understanding the social and economic context in which everyday activities are carried out and the networks in which such activities are embedded; and tracing through the real im-

pacts of ideas, 'symbolic capital' and narratives developed at different scales. This threefold approach is able to explain, for example, whether the faith that development projects have in the intensification of production via *diguettes* is justified by their effects on crop yields; why it is that Zarma farmers allow their fields to degrade as they depart for dry-season economic migration; and the nature of livelihood systems where capital and resources are scarce.

The main difference uncovered between the two cases had to do with the positive investment, and symbolic benefit, of participation in formal natural resource management activities in Burkina Faso, contrasted with the livelihood options pursued in Niger, where economic considerations outweighed a concern for local environmental sustainability in the minds of most Zarma farmers. Where they are present, international projects clearly have an influence on the range of choices that people can make. In Burkina Faso, project assistance leaves visible signs in social networks, village institutions, the new 'landscapes of conservation' and material gains. In particular, some village committees, and the pattern of *diguettes* in villages like Toessin, are a direct outcome of project intervention. *Diguettes* are interesting because they are hybrid structures reflecting both indigenous and external processes of experimentation and inputs of labour and time. They suggest a Boserupian rather than Malthusian response to scarcity. And yet the driving forces behind their construction have less to do with population growth than with the desire of external actors to do something about extensive land degradation and 'desertification' on the Central Plateau. Projects implementing these ideas were developed in Europe and Ouagadougou, sometimes in a politically loaded climate, and this is where discourses about them have circulated. Yet their impacts are transferred to farmer's fields and are visible there. Given the region's previous experimentation with unsuccessful top-down conservation techniques (Atampugre 1993), it is fortuitous that *diguettes* are of benefit to crops and farms, at least for a number of years.

Both studies identified a similar range of options for livelihood diversification. It was clear that 'territories' still matter to local people, even if the spatial reach of Sahelian farmers is now very great. In other contexts, Sahelians' migration routes have extended as far as Japan, Europe and North America. Mossi and Zarma farmers are adept at making what money they can in Côte D'Ivoire, albeit in different ways. Both groups were heavily affected by the rising tide of xenophobia that affected that country in 2000 and its recent civil war. The range and the richness of options pursued in both case studies again suggest an anti-Malthusian conclusion. Faced with the loss of project and state support in Niger, farmers did not quit farming through economic bankruptcy; rather, they found a new mix of activities to keep their communities in business.

In sum, 'development' and 'diversification' exemplify common phenomena in conditions of scarcity in rural Africa, and indeed in other rural areas. Hybrid productive practices and cultural identities are forged both under economic diversification, and through the presence of 'development assistance'. In arguing the

case for a post-Malthusian or anti-Malthusian view of agrarian change in Africa, we need to recognize both scenarios and to see them as mediators in the population–environment relationship. Both form part of the everyday range of pressures and opportunities that characterize livelihoods in the rural Sahel. Although the region is suffering from rising populations and chronic poverty, the acceptance of Malthus' position is unacceptable: we need to add a detailed understanding of the 'symbolic', the economic and the political to this 'productivist' and limited analysis of agrarian change. It is this detailed, interdisciplinary analytical work that the three-fold model of political ecology seeks to elaborate. Understanding the actions and logics of the 'moving targets' that are innovative and mobile people and institutions in diverse ecologies and under different economic development paths surely cannot occur without such an analysis.

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