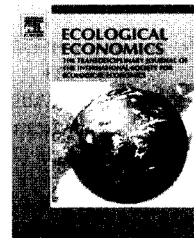


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The CAMPFIRE programme in Zimbabwe: Payments for wildlife services

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ABSTRACT

Payments for environmental services (PES) have been distinguished from the more common integrated conservation and development projects on the grounds that PES are direct, more cost-effective, less complex institutionally, and therefore more likely to produce the desired results. Both kinds of schemes aim to achieve similar conservation outcomes, however, and generally function in analogous social, political and economic environments. Given the relative novelty of PES, what lessons can be learnt and applied from earlier initiatives? In this paper, we describe the evolution over the first 12 years (1989–2001) of Zimbabwe's Communal Areas Management Programme for Indigenous Resources (CAMPFIRE), a community-based natural resource management programme in which Rural District Councils, on behalf of communities on communal land, are granted the authority to market access to wildlife in their district to safari operators. These in turn sell hunting and photographic safaris to mostly foreign sport hunters and eco-tourists. The District Councils pay the communities a dividend according to an agreed formula. In practice, there have been some underpayments and frequent delays. During 1989–2001, CAMPFIRE generated over US\$20 million of transfers to the participating communities, 89% of which came from sport hunting. The scale of benefits varied greatly across districts, wards and households. Twelve of the 37 districts with authority to market wildlife produced 97% of all CAMPFIRE revenues, reflecting the variability in wildlife resources and local institutional arrangements. The programme has been widely emulated in southern and eastern Africa. We suggest five main lessons for emerging PES schemes: community-level commercial transactions can seldom be pursued in isolation; non-differentiated payments weaken incentives; start-up costs can be high and may need to be underwritten; competitive bidding can allow service providers to hold on to rents; and schemes must be flexible and adaptive.

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1. Introduction

Payment for environmental services (PES) has been put forward as a novel approach to achieving conservation goals. Given its newness, some experimentation and adaptation is likely before it enters the mainstream. Are there any

long-standing precursors to PES which could provide lessons about implementation, performance, outcomes and adaptation? One initiative is the Communal Areas Management Programme for Indigenous Resources (CAMPFIRE), started in the late 1980s in Zimbabwe, and subsequently widely emulated elsewhere in southern Africa. It involves the sale by rural

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authorities of the rights to access wildlife to entrepreneurs who in turn market safaris to hunters and eco-tourists. Although its underlying philosophy places it firmly within the 'community conservation' paradigm, its workings share some features with PES. There may be important insights from CAMPFIRE that could inform the emerging debate on how best to implement PES.

In this paper, we explore some lessons learned from CAMPFIRE. We argue that there is more in common between community conservation and PES than is commonly acknowledged. Both play out in analogous institutional landscapes and are subject to similar external pressures. We start by briefly describing the background, key features and evolution of CAMPFIRE (Section 2). We then examine CAMPFIRE through a PES lens, focusing on some of the variation in form and functioning that has emerged over time, and why this happened (Section 3). We draw some lessons from CAMPFIRE that should be taken into account if PES is to move from persuasive argument to successful practice, at least in developing countries, and conclude by identifying some unsolved issues relevant to both approaches (Section 4). Given the drastic recent political, economic and social changes in Zimbabwe, we limit our quantitative assessments of CAMPFIRE to the period 1989–2001. While CAMPFIRE continues to operate today (Section 4.3), we have no fully comparable data after 2001.

2. What is CAMPFIRE?

CAMPFIRE was developed largely around the concept of managing wildlife and wildlife habitat in the communal lands of Zimbabwe for the benefit of the people living in these areas (Martin, 1986). Its foundations were established in the 1960s when moves to commercialize wildlife production were first made (Dassmann, 1964). At that time, wildlife was legally property of the State, which rarely granted licences for commercial use. Consequently, in conflicts with farmers, wild animals were treated as pests. Wildlife was further threatened by the ongoing widespread transformation of its habitats to agricultural land. In short, the future of large wildlife populations outside demarcated conservation areas was bleak.

The principle of wildlife production as a recognised form of landuse outside protected areas was established by the 1975 Parks and Wild Life Act. This granted private landholders the right to use the wildlife on their land for their own benefit, including through safari hunting and the capture and sale of animals. After a slow start, the wildlife industry flourished.¹ Following independence in 1980, the Zimbabwean Government amended the Act to allow rural communities occupying land under communal tenure

also to obtain Appropriate Authority to use wildlife commercially. Apart from removing obviously discriminatory provisions in the Act, the proposed changes were intended to offer an alternative to subsistence agriculture on marginal lands, and so provide better prospects for development. This move was spearheaded by the Department of National Parks and Wild Life Management (DNPWLM), which was exploring such options within the framework of an integrated landuse plan for the communal lands bordering a number of national parks and safari areas in northern Zimbabwe. These areas supported substantial numbers of wild animals, including some commercially valuable species (e.g. elephant, *Loxodonta africana*, buffalo, *Syncerus caffer*, lion, *Panthera leo*, and leopard, *Panthera pardalis*) that were threatened by ongoing expansion of low-yielding subsistence agriculture.

The development of CAMPFIRE was strongly influenced by experiences from Project WINDFALL – Wildlife Industries for All – in which meat from elephant culling and some revenue from trophy fees was occasionally paid to rural communities adjacent to state-managed protected areas, with the aim of encouraging a positive attitude to wildlife. It failed in this regard, but it highlighted a need to devolve proprietorship over wildlife, to enable those living with wildlife to receive direct and sustained benefits from it. If wildlife was to have a future outside reserves, wildlife production would need to become a viable landuse option for communal land farmers (Martin, 1986).

CAMPFIRE was therefore designed specifically to stimulate the long-term development, management and sustainable use of natural resources in Zimbabwe's communal farming areas. It aimed to align landuse more closely with the natural opportunities and constraints of these agriculturally marginal areas. Resident communities were given custody over and responsibility for managing wildlife resources and the right to benefit directly from their use (called Appropriate Authority). As originally conceived, CAMPFIRE was to encompass four major natural resources – wildlife, woodlands, water and grazing – all to be managed by natural resource cooperatives. In practice, however, wildlife use predominates as it produces the most value, principally through safari hunting and eco-tourism. Venison production and the capture and sale of wild animals were other expected sources of wildlife revenue, but they have produced little.

For mainly political reasons, the implementation of CAMPFIRE has departed somewhat from the original plan (Murphree, 1997). Rural District Councils (RDCs), rather than the cooperatives, became the appropriate authorities for wildlife. In return, the RDCs agreed to pass on to producer communities a fixed percentage of the revenues earned. The accepted but non-binding guideline was that at least 50% of the revenues was to be paid to the communities (as Wards)^{2,3}, up to 35% would be

¹ In 1960 there were just three game ranches, totalling 350 km², all producing venison. By the early 1990, this had risen to over 216 ranches covering 37,000 km² and engaged variously in sport and trophy hunting, photographic safaris, game viewing, game cropping for venison, and selling live animals. Expansion occurred more in the drier areas where wildlife production was financially and economically more viable than single-species livestock production (Jansen et al., 1992).

² A ward is a sub-district administrative unit comprising an average of six villages, though settlement in these is not consolidated. For the main CAMPFIRE districts, there was an average 991 households per ward (range 131–3709) and 5.4 persons per household.

³ The term 'community' is used here to refer to a group of people living together in a common social setting in which they interact frequently and regularly. This does not necessarily imply any unity of background, organisation or purpose; most CAMPFIRE communities are highly heterogeneous.

allocated to wildlife management (habitat management, fire control, monitoring, hiring of game scouts etc.), while 15% could be retained by the RDC as an administrative levy.

When CAMPFIRE started it was relatively small (2 districts, 16 wards, and about 8880 households). For the first five years, the number of participating districts and wards grew almost linearly, reaching 12 districts, 102 wards and at least 104,932 households by 1993. The numbers then expanded rapidly as many districts sought appropriate authority, even though most of them had little wildlife. By 2002, the CAMPFIRE Association represented 37 Rural District Councils, covering over 244,000 km² and supporting some 777,000 households, though just 23 of these really functioned as intended. Only 12 of these districts have had a consistently marketable quota of wildlife for hunting or some other sellable natural attraction, however (Khumalo, 2003). Within these districts, the actual wildlife production areas covered 118 wards with ~43,000 km² and ~121,550 households. At least some of this expansion was prompted by the prospect of receiving development aid, large amounts of which were attracted to CAMPFIRE by its initial success and promise of broader change. The increase reinforced a perception of success of community-based natural resource management, which attracted further support and encouraged yet more districts to join.

Given its history and extent, CAMPFIRE has long been considered the flagship community-based natural resource management (CBNRM) programme in southern Africa, attracting much public and academic interest globally. It has produced a wealth of knowledge and experience on the potential for and constraints on the management and sustained use of wildlife by rural communities⁴.

3. CAMPFIRE and payments for environmental services

What are the similarities and differences between CAMPFIRE and PES? In part, the answer depends on how broadly or narrowly PES is conceived and defined. Wunder (2005) has defined PES as a voluntary transaction in which a well-defined environmental service (ES), or landuse likely to secure that service, is bought by at least one ES buyer from at least one ES provider, if and only if the provider actually continues to supply the service. This definition, however, excludes many of the current innovative approaches being developed under looser notions of PES (see Robertson and Wunder, 2005). CAMPFIRE fits within the latter group.

3.1. Actors and services

The principal service sellers in CAMPFIRE are the farming communities, whose land- and resource-use decisions ultimately determine the fate of wildlife. The RDCs, being authorised by government to receive and manage wildlife revenues on behalf of communities, serve as intermediaries. The service is bought by safari operators from the communi-

ties through contracts with the RDCs. It is then packaged into hunting or eco-tourism safaris and sold to safari hunters and eco-tourists as end users (Fig. 1). A consortium called the CAMPFIRE Collaborative Group (CCG), comprising the CAMPFIRE Association (CA) – representing those RDCs with Appropriate Authority – the DNPWLM, various NGOs, a university research unit, and the Ministry of Local Government and Rural Development, helped to initiate and implement the programme by providing technical advice and reconciling different interests (Maveneke, 1998).

The CCG members have also served as channels for funding from bilateral donors. The main donor has been the United States Agency for International Development (USAID), accounting for about two-thirds of this external support. The balance came from the Norwegian Agency for Development Cooperation (NORAD), the UK Department for International Development (DFID), and sundry other agencies⁵. Between 1989 and 2003, USAID spent almost US\$25.2 million on natural resource management in Zimbabwe, including the development of CAMPFIRE (Child et al., 2003). These funds helped to meet the costs of project administration by USAID contractors (20.9% of total expenditure, including audit costs and contingencies); community development, including infrastructure (vehicles, fencing, buildings — 24.4%); development projects and institutional capacity building (12.7%); technical support for wildlife conservation (11.8%); planning and applied research (6.9%); communications and training (3.6%); and grants to the participating NGOs (19.7%). None of the funds was spent on subsidizing the basic transaction between the producer communities and safari operators.

3.2. What is being bought?

Safari operators are essentially wholesalers who buy the rights to bring sport hunters and eco-tourists to their concession areas to hunt a set quota of animals, or track, observe and photograph wildlife. Clients enjoy an experience encompassing notions of wilderness and untamed Africa, accompanied by quality service in the form of accommodation, cuisine and companionship. CAMPFIRE therefore most closely fits the PES concept of payments for landscape beauty.

What is the rationale for paying communities as 'service providers'? First, operators gain access to communal lands and the aesthetic landscape and wildlife values these provide. Second, agreements sometimes included explicit requirements for communities in the concession area not to harass or hunt wildlife, to limit expansion of crops and livestock, to confine human settlement to agreed zones and, in a few cases, to even move away from prime wildlife areas. Living with wildlife can result in damage to crops and other property. The payments can be seen, in part, as compensation for these losses. Such conditions, required by the operators, were generally accepted by the RDCs on behalf of the communities concerned, but not always with their full agreement.

⁴ For more detail on the functioning and assessments of CAMPFIRE in general see Child (1993,2000); Bond (1999); Murphree (1997,2004) and Jones and Murphree (2001,2004).

⁵ Information on the amount of funding from sources other than USAID is not readily available. Moreover, these funds were allocated to support community-based natural resource management generally, not just CAMPFIRE.

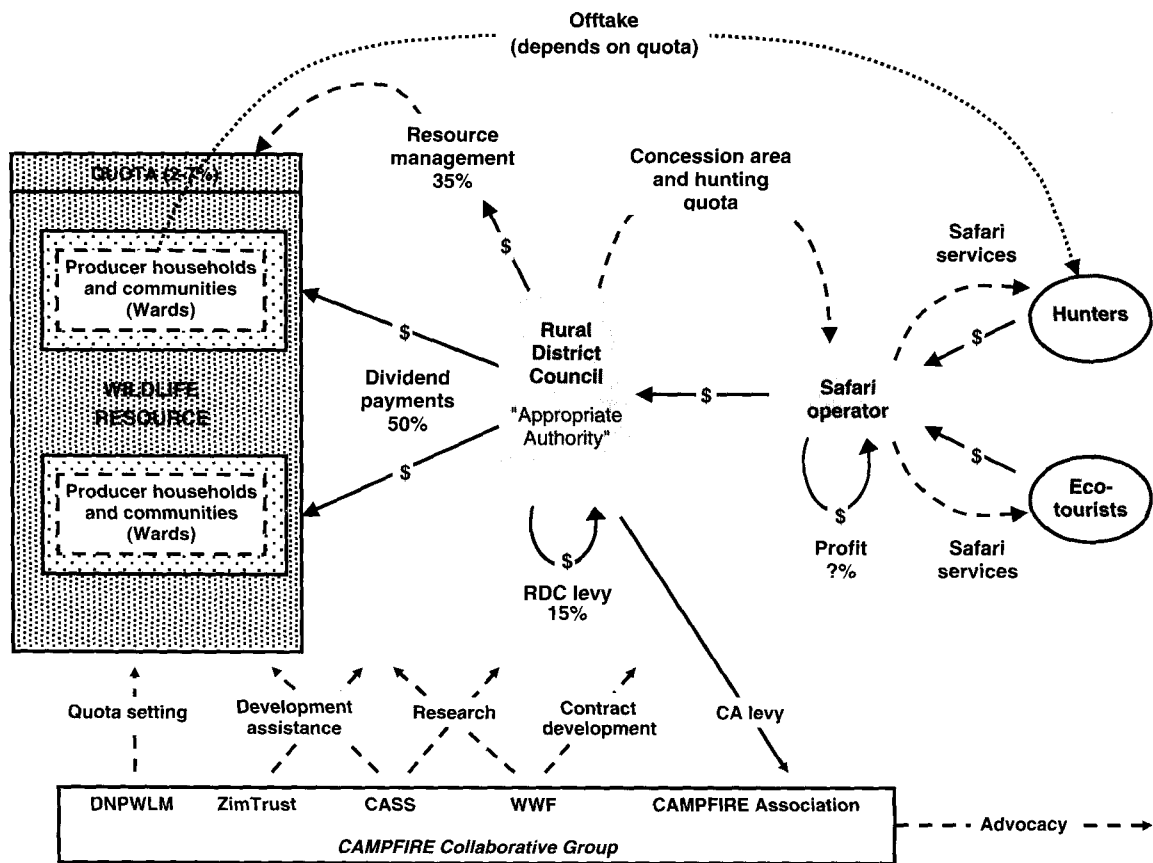


Fig. 1 – General structure of CAMPFIRE in Zimbabwe. Financial transfers — bold lines. Resource offtake — dotted line. Services (incl. by CCG) — dashed lines. Note: Financial assistance from donors to communities administered by the CCG has been omitted. The percentage values represent the recommended allocation of income from concession and trophy fees received by the RDC.

3.3. How are payments effected?

The core contractual agreement is between the RDC, acting as the seller on behalf of its constituent communities, and one or more safari operators buying services on behalf of future clients. The details of the contracts vary considerably between districts. In most cases, the safari operators pay an annual lease fee for the concession plus a trophy fee for each animal shot from an annual quota. In some cases the RDCs receive a percentage of the gross income realised by the safari operator, and in at least one instance the safari operator and the RDC formed a joint-venture partnership. Over time, the RDCs and communities became adept at using competitive marketing to maximize their market share (Bond, 1999). The contracts evolved considerably between 1989 and 2001 as the real value of leases rose and the negotiating skills of both parties improved. From the mid-1990s the rights and obligations of all parties, including an implied conditionality in the link between service provision and payment, began to be stated explicitly in the contracts. To ensure that the sellers were not compromised by periodic devaluations of the Zimbabwean dollar, the contracts were increasingly denominated in foreign currency, albeit paid in Zimbabwean dollars to comply with government regulations.

Adherence to these arrangements has been variable. The RDCs initially did not fully understand or monitor the safari operations and resulting payments, and so relied on operators to make proper payments, which they generally did. The safari operators in turn seldom held RDCs and the wildlife producer communities' to account for not fulfilling their broader obligations relating to landuse. Despite this, most arrangements have held so far, though other, unrelated, factors may be undermining some of them. Any long term declines in wildlife and the aesthetic qualities of the landscape will threaten the viability of these transactions.

3.4. Financial and economic data

Between 1989 and 2001, 18 RDCs earned a total of US\$20.29 million from wildlife-based activities, 97% of which came from just 12 districts. Safari hunting produced most of the revenue (89%); sales of hides and ivory (6%), revenue from eco-tourism leases (~2%) and miscellaneous transactions (3%) made up the balance (Table 1). This revenue is paid out annually in arrears. At a national level, the guidelines on the disbursement of CAMPFIRE revenue have been largely met: 49% has been disbursed to communities (118 wards and over 121,500 households), 20% used for wildlife management, just over

Table 1 – Income earned by Rural District Councils with Appropriate Authority between 1989 and 2001 (Source: Khumalo, 2003)

	Safari hunting	Tourism	Sale of hides and ivory	Other	Total
Income by activity (US\$ million)	18.15	0.46	1.17	0.51	20.29
% of income by activity	89.5	2.3	5.7	2.5	100

12% retained by the District Councils as a levy, and 3% used for other expenses (including the 1.5% levy to the CAMPFIRE Association). The balance (~15%) is still being held by the RDCs and is unlikely to be disbursed (Table 2).

Financial benefits can be considered at four levels: the safari operators; rural district councils; wards; and households. Of these, the returns to commercial safari operations are the least well understood, because their profit margins are not known. As the operators continue to bid for lease, we presume that their returns are positive. The introduction of more competitive marketing of leases has undoubtedly forced operators to become more efficient at marketing and running their operations.

As RDCs have the legal authority to use wildlife, they serve as the gate-keeper for all wildlife revenue. For most RDCs, CAMPFIRE revenues have been a new and significant source of funds coming at a time when the central government, under pressure to devolve authority, took the opportunity to shed some of its fiscal responsibilities. For example, from 1989 to 1993 income from wildlife constituted up to 24% of local revenue, and in several districts it exceeded all other individual sources, including government grants (Bond, 1999). Most RDCs have been somewhat opportunistic in disbursing funds. Between 1989 and 2001, they retained US \$6.3 million (31%) of wildlife revenues, including the agreed council levy (US\$2.51 million, 12.3%) and a substantial block of unallocated funds from which they benefited through interest earned. This does not include the funds set aside for wildlife management (US\$4.1 million). Certain RDCs also benefited from substantial investments in infrastructure, equipment and training provided by donors (Child et al., 2003).

Wards had been created by government as sub-district-level planning and development entities, but with no means of raising revenue. Effectively, they had never progressed beyond being units for political representation at the district level. With revenue received from CAMPFIRE they had, for the first time, financial resources to spend. Between 1989 and 2001, 143 wards received almost US\$9.9 million. In the early days of CAMPFIRE, many RDCs tended to allocate revenue equally between wards, but with growing proprietorship from below and pressure from the CCG above, the producer-ward principle

was increasingly adopted — that payments should be proportional to revenue generated. This is because those communities producing the most revenue are generally those with the largest wildlife populations and so experience the highest direct costs from wildlife damage and have the greatest opportunity costs from foregone agricultural production (Bond, 1999). The aggregate amount received by the wards during 1989–2001 averaged US\$64,037 (median: US\$27,152; range: US\$137–801,042; Fig. 2). Some wards also benefited from investments of donor funds in small projects (eco-tourism facilities, beekeeping, crafts, wildlife management).

In only a few cases has money ever been paid directly to individual households. This has happened in wards where the per household financial benefits were exceptionally high (Child and Peterson, 1991; Murphree, 1997; Bond, 2001). In these cases, the financial benefits have been substantial and occasionally exceeded the estimated gross income from all agricultural sources (Bond, 1999). Notional estimates of gross financial benefit per household across CAMPFIRE can be calculated from the revenue received by a ward divided by its number of households. Estimated this way, the median gross financial benefits to households between 1989 and 2001 extend from US\$20.11 per household in 1989 (range US\$2.39–80.7, $n=16$) when only a few, more productive, wards participated, to US\$2.1 per household in 1998 (range US\$0.2–252.3, $n=95$; Fig. 3). For some districts, the household-level benefits have been substantial (Fig. 4). But for most, wildlife revenues, if paid out, would be supplementary. Between 1989 and 1993 the median financial benefit per household averaged just under 11% of gross income from agriculture (range 2–21%; Bond, 2001). As a result, the wards have generally used their funds to finance community development projects.

This development potential attracted complementary donor funding of about US\$35 million up to 2003. Whether this support was essential to CAMPFIRE's success is unclear. Less than US\$5 million of this was actually given as direct grants to community-based projects, many of them peripheral to mainstream CAMPFIRE operations, or to build district-level infrastructure and purchase capital items. Most of the funding supported the activities of the CCG and its members and paid for research, technical assistance and training.

3.5. Conditionality, costs and scale of benefits

The degree of conditionality between what the CAMPFIRE communities provide and the payments they receive varies with the kind of contractual arrangement and how the RDC decides to disburse the funds. In some districts, payments to wards are based on the proportion of revenue from hunting within a ward. In others, the payments are disbursed equally among the wards irrespective of how much each contributes to the total. In general, those districts with larger wildlife populations had bigger quotas and generated higher revenues,

Table 2 – The allocation of wildlife revenue earned by Rural District Councils between 1989 and 2001 (Source: Khumalo, 2003)

	Producer wards	Wildlife management	Council Levy	Other	Unallocated	Total
Revenue allocated (US\$ millions)	9.89	4.08	2.51	0.68	3.13	20.29
% of total revenue	48.8	20.1	12.4	3.4	15.4	100

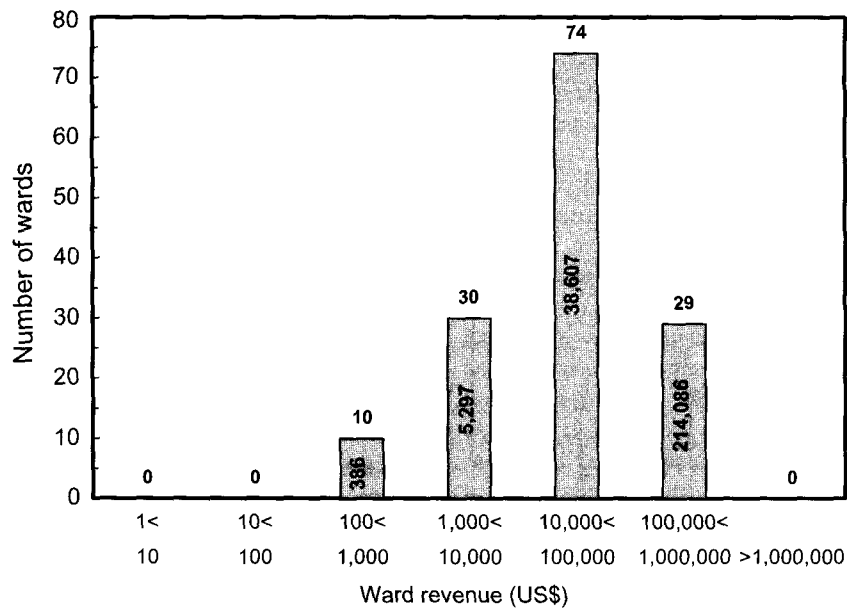


Fig. 2 - Frequency distribution of total CAMPFIRE revenues received by wards (n = 143), 1989-2001. Note: The number of wards in each category is given above the bars while the average revenue received in each category is shown within the bars. The x-axis (ward revenue) is plotted on a logarithmic scale. Source: Khumalo (2003).

but there is considerable year-to-year variation. Wildlife populations in turn are influenced by human population density and landuse intensity. To the extent that some communities made conscious decisions to confine settlement and limit landuse activities to those compatible with maintaining large wildlife populations, a degree of conditionality presumably exists, though it is not easily monitored or acted on in the short term. The best available long-term indicator may be the significant positive relationship between the total

revenue received by RDCs from sport hunting (Y, US\$ million) for the period 1991-2001, and the aggregate value of the hunting quota accompanying the concession (X, US\$ millions):

$$Y = 0.608X - 0.174, r = 0.969, df = 10, p < 0.001.$$

The key assumption underlying CAMPFIRE is that the revenue from using wildlife can create sufficient incentive for communities and individual households within them to

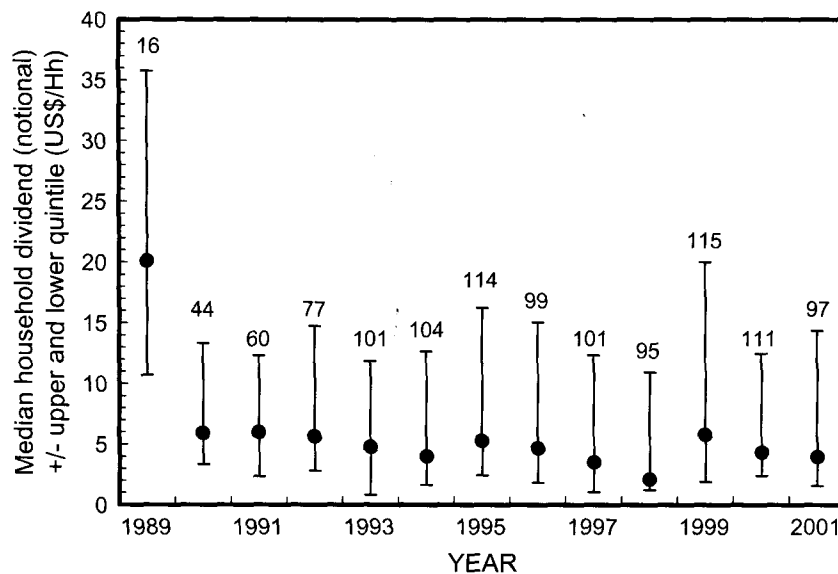


Fig. 3 - Monetary transfers to households of CAMPFIRE dividends, 1989-2001: median, upper and lower quintile values. Note: Number of wards receiving CAMPFIRE revenues is given above upper quintile. Source: based on data in Khumalo (2003).

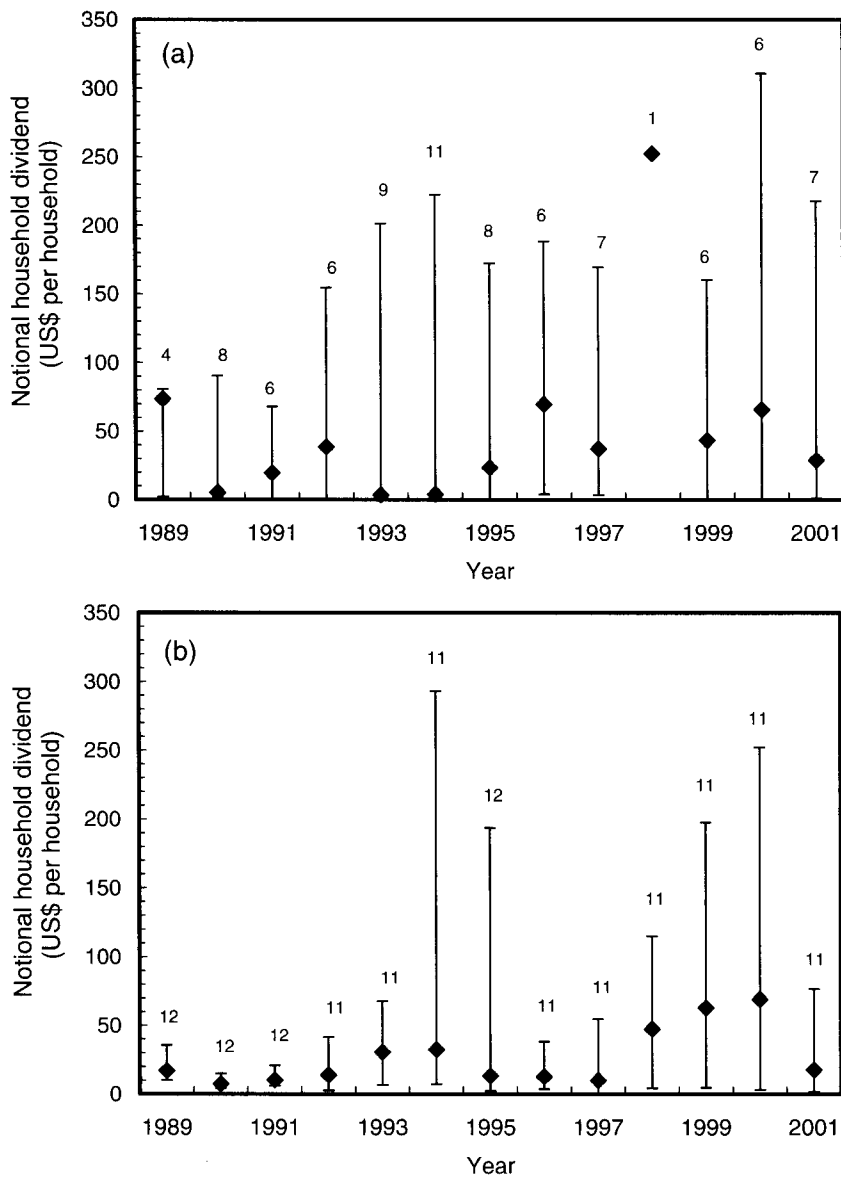


Fig. 4—Median values (and range) of CAMPFIRE dividends per household in the two most profitable districts: (a) Guruve and (b) Nyaminyami (Kariba), 1989–2001. Note: Number of wards receiving CAMPFIRE revenues is given above the range bars.

modify or limit their use of land in appropriate ways. This depends greatly on whether the benefits are assessed at district or ward level, where the aggregate amounts can be considerable⁶, or at household level where the payments, if made at all, are generally small and intermittent (Table 3). In most wards, household payments have not been made, or if so then the money has immediately been paid back into community funds to be spent on agreed community projects (e.g. Child and Peterson, 1991). Instead, the communities have opted to use their aggregated funds to build or extend schools,

⁶ The derived benefits are even greater at a national level, where the US\$20 million direct CAMPFIRE revenues translate into an estimated US\$100 million, once upstream and downstream multiplier effects are taken into account (Muir-Leresche, cited by Child et al., 2003).

construct clinics, drill boreholes, or purchase grinding mills or irrigation pumps.

The benefits at whatever level must also be seen in relation to the costs involved. In contrast to the RDCs, where the costs of wildlife production are relatively minor, individuals and communities sustain considerable direct and opportunity costs. They must bear the costs of losing crops and livestock to wildlife, as well as living with real and perceived threats to their lives. Proposed technical solutions, such as the use of electric fencing or chemical deterrents, have generally been disappointing. Where people have curtailed hunting of wildlife for themselves, their intake of protein has probably declined. The opportunity costs to communities of wildlife production are site-specific. Tolerating wildlife often means damage to crops and property, an outright cost. The loss of opportunities to hunt (even if illegal) is another opportunity cost. In some wards, local wildlife committees, usually operating under the influence of the RDCs and outside

Table 3 – Distribution of CAMPFIRE revenues in 1999 in the three most profitable districts (in US\$) (derived from data given in Khumalo, 2003)

Organisational level	District		
	Binga ^a	Guruve ^b	Nyaminyami ^c
Rural District Council			
1999 income	301,580	489,872	772,731
Retained	103,368	349,114	470,429
Disbursed	198,212	140,758	302,302
% disbursed	65.7	28.7	39.1
Ward			
Average	9439	23,460	25,192
Range	3082–30,826	0–56,160	0–55,918
Number of CAMPFIRE wards	21	11	12
Household			
Average	10	58	59
Range	3–35	0–160	0–197
No. households (all wards)	19,669	5303	5720

^a The Binga RDC distributes some revenue to each ward, irrespective of whether they have exploitable wildlife populations or other natural attractions.

^b In Guruve, only 11 out of 21 wards produced CAMPFIRE revenues during the period 1989–2001, and then not in every year. Payments to wards reflect their contributions to annual revenue generation.

^c In Nyaminyami, 12 out of 16 wards are involved in CAMPFIRE, with payments reflecting their contributions to annual revenue generation.

advisors, developed by-laws to limit the expansion of settlement, cultivation and use of natural resources. For example, communities in Nenyunka (Gokwe North District), Kanyurira (Guruve), and Ngwachumeni Island in Mahenye Ward (Chipinge)⁷, agreed to limit settlement in some wildlife areas, which meant giving up the opportunity to farm the land. Such deals may be more effective in terms of restricting new immigration, however. Many community leaders traditionally welcome new settlers, locating them on the boundaries of existing settlement as a barrier against wildlife, so reducing wildlife damage to themselves (Sithole and Frost, 2002). By excluding these migrants, local communities probably sacrifice opportunities to benefit from their skills and assets (Bond, 1999). Where the land set aside for wildlife has no agricultural potential because of shallow soils or rugged terrain, or if the expansion of agriculture is limited by access to capital and labour, opportunity costs are small.

Many RDCs have also promulgated by-laws on the use of natural resources, further pressurising communities and individuals to conform to larger landuse plans, but often without proper consultation. Whereas these measures appear as examples of an economic incentive driving collective action to modify landuse, the regulations have seldom been enforced or payments withheld in cases where they have been flouted (Pangeti and Hansson, 1997).

In summary, although the aggregate revenue from wildlife at ward and district level is striking, for many communities the small value of these amounts at a household level has generally

not been sufficient incentive for individuals to forego other more immediate and individually rewarding landuse practices. This raises the question of whether, in the long run, such small rewards alone can sustain wildlife-based landuses (Bond, 1999, 2001). CAMPFIRE's greatest achievement and legacy may be indirect: the empowerment of communities to manage their own revenues and projects (Murphree, 2004).

3.6. Baselines and additionality

CAMPFIRE was initially conceived as a way of conserving wildlife and wildlife habitat in the communal lands of Zimbabwe (Martin, 1986). The programme expanded rapidly with few if any social, economic or biological baselines being measured. One possible measure of performance from which to calculate additionality could be changes in the populations of elephant, buffalo and other large conspicuous species in the CAMPFIRE areas, compared to changes elsewhere in Zimbabwe. Since the early 1980s, populations of such species have been monitored through aerial census in the main protected areas and in the communal lands of the Sebungwe Region⁸, but only more sporadically elsewhere. While the total number of elephant in the Sebungwe has remained more or less constant, there has been a marked shift in distribution away from areas of human habitation (Dunham and Mackie, 2002). This is particularly so in Gokwe District, where a substantial amount of prime wildlife habitat has been converted to settlement and agricultural lands over the last 20 years, though in the context of the region more broadly, including some large protected areas, these changes are still relatively small (Cumming, 1997).

A second potential indicator is changes in wildlife habitat in CAMPFIRE areas, quantified by using remote sensing, but this is hampered by the lack of extensive (and expensive) ground-based verification (Dunham et al., 2003). Unverified regional-scale remote sensing (~18,000 km²) does not consistently capture the variability of the landscape and the fine-scale patterns of settlement and landuse, all of which affect wildlife production (Dunham et al., 2003).

A third option is to use gross wildlife revenue in CAMPFIRE areas as a proxy for wildlife production⁹. Wildlife revenue (and therefore wildlife production) is negatively exponentially related to human population density, suggesting that wildlife and farmers compete for key habitats (principally riverine areas with alluvial soils) and water within the larger landscape (Bond, 1999). In some wards, e.g. Masoka (Guruve District) prime wildlife habitat has been retained and there is ongoing coexistence between people and wildlife.

3.7. Permanence, accounting and leakage

CAMPFIRE is supported by now long-established legislation. The arrangements have no mandated time limits and can potentially continue indefinitely. Nevertheless, permanence is not guaranteed. The policy and legislative changes that

⁸ Three major CAMPFIRE districts are located in the Sebungwe Region: Nyaminyami, Binga and Gokwe North.

⁹ The sample used wards in which revenue was allocated on the 'producer ward' principle, rather than spread among all wards in a district irrespective of their contribution to CAMPFIRE revenues.

⁷ In the case of Mahenye, this happened in 1983, during Operation WINDFALL, the precursor of CAMPFIRE: Peterson, 1991.

allowed payments to be made to RDCs and wildlife producer communities are being increasingly threatened by an unwritten policy of re-centralisation. Even limited property rights have been unilaterally revoked. These kinds of reversals have been used by some to claim that community conservation programmes have failed and that a return to protection is required (e.g. Barrett and Arcese, 1995). If such a notion becomes broadly held, it could undermine the generally supportive policy and legislative environment in which CAMPFIRE operates.

The permanence of CAMPFIRE's positive environmental impacts also depends on broader economic factors. Changes in the relative market prices of wildlife and agricultural commodities could still easily alter landuse practices (as in the case of the recent spread of cotton cultivation in parts of the Zambezi Valley). Factors that could cause relative price changes include: genetic modifications of livestock and key crops (e.g. cotton); reduced demand for wildlife-based tourism resulting from local and global instability; high oil prices; changing consumer tastes; and climate change. At a macro-level continuing economic decline and hyper-inflation in Zimbabwe are exacerbating already high levels of unemployment, leading to a return to subsistence agriculture, increasing demands for agricultural land, and a growing livelihood dependence on natural resource extraction.

To the extent that CAMPFIRE may have succeeded in lessening human impacts on wildlife and the environment by modifying settlement and landuse, these activities and their impacts on wildlife could potentially be transferred and intensified elsewhere (i.e. leakage). Accounting for this is difficult, since most of the communal lands containing substantial wildlife populations are already part of CAMPFIRE. This wide scope of intervention makes the leakage problem less immediately relevant.

3.8. Participation of marginal groups

All of the communities involved in CAMPFIRE are classed as poor (UNDP/PRF/IDS, 1998). Given that most households have received only limited income from CAMPFIRE revenues, the direct financial impact on poverty, especially of the poorest, has been marginal. Nevertheless, from a development perspective, the redistribution of power and the formation of effective units of common property management have been important achievements (Hulme and Murphree, 2001). CAMPFIRE has enhanced the communities' sense of proprietorship over their natural resources, and ongoing dialogue and discussions have helped to build confidence and skills in negotiating and managing conflicts. It remains to be seen if these attributes can be used advantageously in other contexts.

On the negative side, there is largely anecdotal evidence of the benefits in many producer communities being captured or manipulated by elites to their individual advantage. These include nepotism employment practices and appropriation of project equipment for personal use. Some ethnic groups such as the Tonga, vaDema and Shangwe have been sidelined in much of the decision-making, even though they are often the original inhabitants of these remote areas. Women are also generally marginalised, and their needs and concerns overlooked (Sithole and Frost, 2002). At a more general level, however, the intra-

community and intra-household impacts of CAMPFIRE are poorly known.

4. Discussion

4.1. Contrasts between CAMPFIRE and PES

CAMPFIRE was never conceived of as a payment-for-environmental-services programme, though it exhibits many PES-like features. Both are driven by market forces, with CAMPFIRE perhaps being even more market-driven than most PES. The market for concessions is highly competitive. More than 180 safari hunting companies are registered in Zimbabwe, together with 131 Zimbabwe-based tourism companies.¹⁰ All can bid for concession areas and associated hunting and eco-tourism rights from among the 37 CAMPFIRE communities, and many do. The communities in turn vie for experienced leaseholders who can use the quota fully. In contrast, many current PES schemes often have just one buyer and a few competing sellers.

Nonetheless, CAMPFIRE differs from PES in the strict sense as defined by Wunder (2005). First, although CAMPFIRE agreements include elements of contingency, these are seldom enforced; payments to wards and households are not yet fully conditional on implementing agreed landuse changes. Instead, payments are seen as supplementary income, which may be sustained if certain activities are avoided and immigration is curtailed. Conditionality, to the extent that it exists, relates more to the size of the hunting quota and hunters' success, which are only partly determined by landuse. Second, at the ward and household levels, participation in CAMPFIRE has not always been voluntary. Legal authority to market wildlife and distribute the resulting revenues is vested in the RDCs and they have often unilaterally sought that authority. While they are notionally democratic bodies, established to improve the welfare of their constituents, in reality they have their own interests, including the need to generate revenue and spend it to their political advantage. Importantly, most RDCs see CAMPFIRE as a solution to their growing financial problems, and so oscillate between driving communities to accept the provisions of a particular CAMPFIRE arrangement, including how the land and its resources should be used to generate revenue, and being responsive to the development needs and concerns of those communities. Overall, many wards and individual households are largely involuntary participants in a much larger process, and some are likely to carry net losses, i.e. the opportunity costs exceed the benefits from participation.

CAMPFIRE has broader objectives than the ideal PES transaction, which is purely concerned with securing the delivery of an environmental service through payments. It was originally conceived within a conservation framework, the focus being on redistributing revenue raised from the use of wildlife away from central government to local administrations and communities living with wildlife so as to create a

¹⁰ See <http://www.zimbabwetourism.co.zw/directory/hop.htm> and <http://www.zimbabwetourism.co.zw/directory/top.htm>.

greater incentive for conservation. Any other benefits, such as rural development and improved human well-being, were considered as positive side-effects. Given the underdevelopment of the communities and the potential for wildlife revenues to fund development, however, wildlife production soon came to be seen as a means of achieving human-development ends (Jones and Murphree, 2001). Subsequently, the focus has shifted further to building and strengthening the effectiveness of rural organisations and institutions (Murphree, 2004).

4.2. Lessons from CAMPFIRE

Recognising the important similarities and differences between CAMPFIRE and PES, we suggest the following main lessons for emerging PES initiatives.

4.2.1. Community-level commercial transactions can seldom be pursued in isolation

A key attraction of PES is that it is potentially a more direct source of conservation finance, unencumbered by presumed institutional complexities, economic inefficiencies, inevitable trade-offs and unsustainability of more indirect approaches ICDPs (Ferraro and Kiss, 2002). Nevertheless, in the process of negotiating and designing agreements, side agendas and aims may arise, influencing the trajectory, mode and tempo of the transactions. CAMPFIRE started out with a fairly limited objective – to decentralise the financial benefits from using wildlife so as to create an incentive for wildlife conservation – but as the programme evolved, new objectives emerged. Some of these were necessary to address unforeseen problems; others to accommodate internal diversity, individual ambitions, and shifts in influence and authority at different scales.

4.2.2. Non-differentiated payments weaken incentives

In some districts, CAMPFIRE revenues were paid to all wards irrespective of whether they contributed to generating those revenues (many did not). Some animals move seasonally into regions outside the main hunting areas, causing wildlife damage that needed compensation. Nevertheless, this approach substantially reduced the incentive for wildlife production in producer wards (e.g. in Binga District, payments were reduced by 26%). Similar quandaries may arise about whether all households should be paid equally. An advantage is that non-differentiated payments minimise the risk of envy and internal division undermining implementation. Nevertheless, a severe disadvantage is that the incentive is diluted, or that the intervention causes outright losses for those households carrying disproportionate opportunity costs.

4.2.3. Start-up costs are high and may need to be underwritten

By 2003, CAMPFIRE had received substantial financial and technical support from donors. Given the almost complete absence of models, skills and infrastructure for community-led conservation in Zimbabwe's communal lands at the time, one can argue that the programme, with all the broader conservation and development expectations placed on it, could not have achieved what it did without some initial external support. Whether these had to be as large as

they were is a moot point. CAMPFIRE was part of a broader suite of initiatives to support community-based natural resource management, so disaggregating the necessary start-up costs of CAMPFIRE from the costs of these other initiatives is not possible. Many of the activities of the CAMPFIRE Collaborative Group, the intellectual force behind the programme, were financed externally. These included creating an enabling environment – developing skills, institutions and infrastructure – and allowing the CCG to lobby extensively for changes in policies and statutes, thereby making it possible for CAMPFIRE to evolve from an uncertain beginning. By promoting the concept consistently and coherently, the CCG convinced many that the initiative was an experiment deserving support. Many PES face similar issues: establishing the principle; developing the necessary institutions; addressing issues of property rights and tenure; ensuring that there are supportive administrative and judicial processes; providing education and training on contracts, management, monitoring and enforcement; and encouraging the adoption of non-agricultural livelihoods. To meet the costs of creating the necessary supportive environment for PES solely from payments runs the risk of raising the costs to buyers to unaffordable levels, or of reducing the benefits to the sellers to a point where there is little incentive to provide the service. This will either limit PES to those few places where a supportive environment already exists, or prompt a two-stage approach: an initial phase, supported externally, to establish the necessary conditions, followed by an operational phase governed by free-market principles.

4.2.3.1. *Competitive bidding allows producers to hold on to rents.* The demand for hunting and eco-tourism opportunities among many different operators ensured that competition for concession areas was high. The use and refinement of competitive pricing arrangements such as auctions and tenders allowed RDCs and provider communities to secure greater rent from the resource. For example, post-tender prices for concession areas in three districts were 159–329% higher than the prices paid for these concessions before tendering was introduced (WWF, 1997). Decentralisation has also helped, by allowing these processes to be experimented with locally rather than being centrally-driven. In many PES schemes, there is only one buyer, who therefore has the monopsonic advantage of being able to dictate terms. Creating a more competitive buyer environment in which providers have greater bargaining power is a significant challenge to emerging PES schemes.

4.2.4. Schemes must be flexible and adaptive

The flexibility of CAMPFIRE has been one of its major strengths, as it has allowed considerable variation in functioning to emerge. Although each CAMPFIRE initiative is based on the same fundamental plan organised within a common regulatory environment, the details of their development and outcomes to date all differ. Variation in environmental and social settings, timing (in relation to the experience of others and to changing economic and political circumstances), and the nature of external advice and advisors, all provided subtly different selective environments in which these initiatives evolved.

From this, adaptive solutions to differing social, environmental and other circumstances materialized. By not insisting on rigid adherence to some preconceived plan, those who promoted the CAMPFIRE concept ensured that local communities and outside interests could forge relationships that they thought best fitted their circumstances at the time. In so doing, a much greater sense of local ownership and commitment has been developed. No doubt, PES schemes will be similar, if allowed to follow the same route. Undoubtedly there are some instances where more structure would be advantageous. For example, the lack of a clear legal framework governing tenure, property rights and responsibilities for receiving and distributing funds has exposed CAMPFIRE communities to the vagaries of administrative whim and selective interpretation. Nevertheless, CAMPFIRE continues to evolve, despite extremely difficult circumstances outside the control of the organisations concerned. The authority and skills acquired early in the project are being used to develop new arrangements that will allow the communities to circumvent emerging problems, such as the growing non-payment of revenues. To flourish, payments for environmental services will need to show similar flexibility and adaptability.

4.3. Next steps

CAMPFIRE's current dynamics are being driven mainly by larger-scale macroeconomic and political processes, both of which are undermining local-level management (Mapedza and Bond, 2006). The so-called 'fast track' land reform programme in the country has disrupted the wildlife industry, especially on private land and state concession areas. Whereas safari hunting in the communal land concessions has so far proved more resilient than other sectors of the tourism industry, with ongoing demand for hunting, it depends on the continued existence of large wildlife populations. Some communities remain deeply committed to the CAMPFIRE ideal, continuing with its processes – wildlife monitoring, overseeing contracts, involvement in quota setting, allocating revenues in transparent and accountable ways – despite the absence of external support. Deepening poverty is forcing people to rely more heavily on extracting natural resources, including wildlife, for both subsistence and commercial purposes. Reports of increased poaching, expansion of settlement, and harassment of wildlife, while not well documented, must be a cause for concern.

The institutional environment is also now much less enabling. Donor support, for both CAMPFIRE and rural development generally, has been greatly reduced. The Zimbabwe Government, through the Zimbabwe Parks and Wildlife Management Authority (formerly DNPWLM), has recentralised aspects of wildlife management, including problem animal control and quota setting, weakening people's sense of ownership. The RDCs have few local sources of revenue other than those coming from CAMPFIRE, so more delays in payment and underpayment of dividends to communities are likely. Recently, in response to growing dissatisfaction over increasing delays by the RDC to pass on the community's share of the revenues, the Masoka community negotiated direct payment of its dues by the safari operator, bypassing the Guruve RDC, which receives its agreed share separately (Russell Taylor, WWF SARPO, pers. comm.). Such innovation,

borne of necessity, will be needed to sustain CAMPFIRE. In areas where interest in CAMPFIRE may have weakened, efforts to revive the programme will be able to build on earlier achievements. The resettlement of some former commercial farms, which previously had switched to wildlife production, because of the unsuitability of much of the land for conventional agriculture, provides an opportunity to extend CAMPFIRE to new areas, through issues of property rights, community organisation, and whether there are still exploitable wildlife populations, need to be resolved.

Three other interrelated problems also require attention (Jones and Murphree, 2001). First, the wildlife areas in the communal lands need better delineation; currently, as management units, they often have no particular economic or ecological rationale. They have to be large enough to sustain an economically viable and ecologically sustainable resource base, or be positioned adjacent to reserves that are, but conversely should be sufficiently small and discrete to allow for direct interaction and decision-making among the landusers, preferably ones forming a coherent and recognised community group. Such a combination is not easily achieved.

Second, the communal lands are organisationally complex with overlapping but not wholly coincident jurisdictions among different authorities – traditional, spiritual and modern. Internally, the communities are differentiated by social standing based on lineage, influence, and relative wealth, among others. Achieving consensus can be more difficult than is commonly assumed.

Finally, property rights are not clearly defined; both individual and community tenure are insecure. Whereas households have usufruct rights over their arable lands, their rights elsewhere are collective, often overlapping with neighbouring communities. This creates uncertainty, competing interests, and can result in opportunistic use of resources. Investments in management tend to be limited to those that produce short-term returns. As the producer communities are not legal entities, their contracts are subject to common law. Despite calls to strengthen both communal and individual rights, including by a government-appointed commission on land tenure (Rukuni, 1994), communities and their constituents remain in legal limbo. For CAMPFIRE to be sustained these contradictions eventually will have to be resolved.

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REFERENCES

- Barrett, C.B., Arcese, P., 1995. Are Integrated Conservation and Development Programmes sustainable? On the conservation of large mammals in sub-Saharan Africa. *World Development* 23, 1073–1085.

- Bond, I., 1999. CAMPFIRE as a Vehicle for Sustainable Rural Development in the Semi-Arid Communal Lands of Zimbabwe: Incentives for Institutional Change. PhD thesis, Department of Agricultural Economics and Extension, Faculty of Agriculture, University of Zimbabwe, Harare.
- Bond, I., 2001. CAMPFIRE and the incentives for institutional change. In: Hulme, D., Murphree, M.W. (Eds.), *African Wildlife and Livelihoods. The Promise and Performance of Community Conservation*. James Currey, Oxford, pp. 227–243.
- Child, B.A., 1993. Zimbabwe's CAMPFIRE programme: using the high value of wildlife recreation to revolutionise natural resource management in communal areas. *Commonwealth Forestry Review* 72, 284–296.
- Child, B., 2000. Making wildlife pay: converting wildlife's comparative advantage into real incentives for having wildlife in African savannas, case studies from Zimbabwe and Zambia. In: Prins, H.E. T., Grootenhuis, J.G., Dolan, T.T. (Eds.), *Wildlife Conservation by Sustainable Use*. Kluwer Academic Publishers, Boston, pp. 335–387.
- Child, B., Peterson, J.H., 1991. CAMPFIRE in Rural Development: The Beitbridge Experience. University of Zimbabwe Joint Working Paper Series 1/91, Centre for Applied Social Sciences, University of Zimbabwe, Harare, Zimbabwe, (mimeo).
- Child, B., Jones, B., Mazambani, D., Mlalazi, A., Moinuddin, H., 2003. Final Evaluation Report: Zimbabwe Natural Resources Management Program — USAID/Zimbabwe Strategic Objective No. 1. USAID, Washington, DC. 153 pp. (typescript).
- Cumming, D.H.M., 1997. Aerial photographic survey of the Sebungwe and Dande/Chiswiti areas in the mid-Zambezi Valley in Aug/Sept 1993. In: Lynam, T.P., Cumming, D.H.M. (Eds.), *Landuse Changes, Wildlife Conservation and Utilisation, and the Sustainability of Agro-ecosystems in the Zambezi Valley*. EU Final Technical Report, Volume 2, WWF Regional Office, Harare, Zimbabwe, (mimeo).
- Dasmann, R.F., 1964. *African Game Ranching*. Pergamon Press, Oxford.
- Dunham, K.M., Mackie, C.S., 2002. National Summary of Aerial Census Results for Elephant in Zimbabwe: 2001. WWF-SARPO, Occasional Paper 1. WWF-SARPO, Harare, Zimbabwe, (mimeo).
- Dunham, K.M., Davies, C., Muhwandagara, K., 2003. Area and Quality of Wildlife Habitat in Selected CAMPFIRE Districts. WWF-SARPO and the CAMPFIRE Association, Harare, Zimbabwe, (mimeo).
- Ferraro, P., Kiss, A., 2002. Direct payments to conserve biodiversity. *Science* 298, 1718–1719.
- Hulme, D., Murphree, M. (Eds.), 2001. *African Wildlife and Livelihoods. The Promise and Performance of Community Conservation*. James Currey, Oxford.
- Jansen, D.J., Child, B., Bond, I. 1992. Cattle, Wildlife Both or Neither. Results of a financial and economic survey of commercial ranches in southern Zimbabwe. WWF Multi-species Animal Production Systems Project, Paper 27, WWF Regional Office, Harare, Zimbabwe, (2 volumes, mimeo).
- Jones, B., Murphree, M., 2001. The evolution of policy on community conservation in Namibia & Zimbabwe. In: Hulme, D., Murphree, M.W. (Eds.), *African Wildlife and Livelihoods. The Promise and Performance of Community Conservation*. James Currey, Oxford, pp. 38–58.
- Jones, B.T.B., Murphree, M.W., 2004. Community-based natural resource management as a conservation mechanism: lessons and directions. In: Child, B. (Ed.), *Parks in Transition — Biodiversity, Rural Development and the Bottom Line*. Earthscan, London, pp. 63–103.
- Khumalo, M.A., (compiler) 2003. CAMPFIRE Monitoring and Evaluation Data 2001. WWF-SARPO and the CAMPFIRE Association, Harare, Zimbabwe, (mimeo).
- Mapedza, E., Bond, I., 2006. Political deadlock and devolved wildlife management in Zimbabwe. The case of Nenyunga Ward. *The Journal of Environment and Development* 15, 1–21.
- Martin, R.B., 1986. *Communal Areas Management Programme for Indigenous Resources* (April 1986, revised edition). Branch of Terrestrial Ecology, Department of National Parks and Wild Life Management, Harare, Zimbabwe, (mimeo).
- Maveneke, T.N., 1998. Local participation as an instrument for natural resources management under the Communal Areas Management Programme for Indigenous Resources (CAMPFIRE) in Zimbabwe. Proceedings of an International Workshop on Community-Based Natural Resource Management (CBNRM), Washington, D.C. May 10–14, 1998 (online at: <http://srdisc.ciesin.columbia.edu/cases/Zimbabwe-Paper.html>).
- Murphree, M.W., 1997. Congruent Objectives, Competing Interests and Strategic Compromise. Concept and Process in the Evolution of Zimbabwe's CAMPFIRE Programme. *Community Conservation in Africa Working Paper*, vol. 2. Institute for Development Policy and Management (IDPM), University of Manchester, Manchester, U.K.
- Murphree, M., 2004. Communal approaches to natural resource management in Africa: from whence to where? *Journal of International Wildlife Law and Policy* 7, 203–216.
- Pangeti, G.N., Hansson, R., 1997. SupCamp: Support to Campfire Review March 1997. Geckoconsult (Pvt.) Ltd, Harare, Zimbabwe, (mimeo).
- Robertson, N., Wunder, S., 2005. Fresh Tracks in the Forest. Assessing Incipient Payments for Environmental Services Initiatives in Bolivia. Center for International Forestry Research, Bogor, Indonesia.
- Rukuni, M. (Chairman) 1994. Report of the Commission of Inquiry into Appropriate Agricultural Land Tenure Systems. Government Printers, Harare, Zimbabwe, (2 volumes, mimeo).
- Sithole, B., Frost, P.G.H., 2002. Appropriate social units of analysis in the CAMPFIRE programme in Zimbabwe. In: Oglethorpe, J. (Ed.), *Adaptive Management: From Theory to Practice*. SUI Technical Series Volume 3. IUCN Publications Services Unit, Huntingdon, UK, pp. 131–140.
- UNDP/PRF/IDS, 1998. Zimbabwe Human Development Report 1998. United Nations Development Programme, Poverty Reduction Forum, and Institute of Development Studies. University of Zimbabwe, Harare, Zimbabwe.
- Wunder, S., 2005. Payments for Environmental Services: Some Nuts and Bolts. CIFOR Occasional Paper No. 42. Center for International Forestry Research, Bogor, Indonesia. 24 pp.
- WWF, 1997. *Marketing Wildlife Leases*. Wildlife Management Series No. 3. WWF Regional Programme Office, Harare, Zimbabwe. 43 pp.