SUSTAINABLE COMMERCIALISED USE OF WILDLIFE AS A STRATEGY FOR RURAL POVERTY REDUCTION: THE CASE OF 'CAMPFIRE' IN ZIMBABWE

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ABSTRACT

The threat that uncertainty creates incentives for accelerated rates of use of environmental resources creates the need for institutions that constrain human actions. Ultimately, economic development depends on institutions that can protect and maintain the environment's carrying capacity and resilience. Zimbabwe faces an increasing incidence of poverty with the poorest areas being wildlife-abundant rural districts where the sustainable use of the wildlife and other natural resources could greatly reduce rural poverty. CAMPFIRE is a framework to conserve wildlife and fight poverty by giving rural communities, through their rural districts councils, the authority to manage and use local resources, particularly wildlife, to derive economic benefits. Despite the significant gains that CAMPFIRE has recorded, literature indicates that the current low levels of monetary benefit and local participation, among other problems, have not been significant in alleviating poverty. With reforms, CAMPFIRE could potentially reduce rural poverty. Elinor Ostrom carried out an investigation of the institutions that characterise some of the world's long-enduring communally owned resources and concluded that there is a set of design principles that they share. Our starting point in search for reform that should be made in CAMPFIRE is an investigation of the extent to which Ostrom's design principles are satisfied. Our investigation suggests that the direction of necessary reform of CAMPFIRE would be to encourage the formation of institutions that also honour the congruence between clearly defined resource and governance boundaries; congruence between appropriation and provision rules and local conditions; collective choice arrangements; and localised monitoring, increased local communities' contestations. These principles could be taught as part of extension programmes with the hope that communities themselves will set in motion mechanisms for adapting them.

1. Introduction

Uncertainty clouds the interaction between humans and the environment, through various systems of ownership. Such uncertainty is caused, among other things, by climate, political upheaval, health risks, or financial variability (Hanna and Munasinghe 1995). In human systems, uncertainty creates incentives for accelerated rates of use due to the lack of assurance that resources not used in the present will be available in the future (Bromley 1991; Hanna, Folke and Mäler 1995). The threat of the possibility of collapsing resource use decisions from the future to today as created by uncertainty in human systems creates the need for institutions that constrain human actions (Hanna, Folke and Mäler 1995). Institutions refer to the rules, norms, and strategies adopted by individuals operating within and across

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organisations and exist in the minds of the participants and are sometimes shared as implicit knowledge rather than in an explicit and written form (Ostrom 1999). The knowledge of how institutions function in relation to humans and their use of the environment is thus critical to the design and implementation of effective environmental protection (Hanna and Munasinghe 1995). Ultimately, economic development depends on institutions that can protect and maintain the environment's carrying capacity and resilience (Arrow *et al* 1995). Thus, sustainable use of the natural resources could enhance economic development and greatly reduce poverty.

During 1995/96, 61% of Zimbabwean households were classified as poor and this translates to 76% of the population being poor. Poverty is much more widespread in rural areas than in urban areas with 75% of the rural households being poor compared to 39% of urban households (CSO 1998). Measured by numbers of people, 86% of the rural and 53% of the urban population were viewed as poor. The majority of the Zimbabwean population lives in the rural areas (Child 1995) – 63% of the households live in rural areas. The poorest districts are wildlife-abundant areas, especially the poorest three districts namely Hwange, Binga and Nyaminyami. Of course this result is to be expected since these communities live in agriculturally less productive areas that are largely only suitable for extensive livestock production and wildlife conservation. This gives room for driving rural economic development by complementing the ongoing poverty-reduction strategies of land reform and centrally funded programmes to mitigate the social dimensions of adjustment through the commercialised sustainable use of the wildlife resource.

The communal areas management programme for indigenous resources (CAMPFIRE) in Zimbabwe consists of this initiative to eradicate particularly rural poverty, through the sustainable use of previously inaccessible indigenous resources. The programme gives communities, through their rural district councils (RDCs), the appropriate authority[3] (AA) to manage and use local resources, particularly wildlife, to derive economic benefits thereby fostering rural development. These economic benefits from commercialised wildlife use have helped to alleviate the persistence of poverty in the rural areas of an agro-based economy that had been fuelled by recurrent droughts coupled with nuisance from wildlife.

Significant gains have been recorded in CAMPFIRE, such as the increased share of land devoted to wildlife management, building up of institutional and administrative capacity at rural district (RD)[4] level, development of social infrastructure and influencing sensible regional wildlife policy reform, However, literature (for example Halser 1999, Patel 1998, Murombedzi 1992) indicates an array of problems that have emanated from or have not been resolved by CAMPFIRE. These include the paternalistic tendencies of RDCs towards local villages and wards, elite capture by both traditional and democratically elected authorities, the failure of the programme to incorporate local knowledge and practices, the continued prohibition of local use of wildlife resources, continued subsistence and commercial poaching, and failure of the programme to resolve human-wildlife conflict.

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[3] "Appropriate Authority in effect grants [Rural] District Councils the same rights as commercial farmers enjoy on private land. Councils are empowered to enter into contracts with private organisations for the exploitation of their wildlife, receive all payments directly and carry out their own problem animal control. Equally well the onus is on them to carry out their own law enforcement and protect the resource" (DNPWLM 1989, p5, quoted in Murombedzi 1992, p13).

[4] The terms RD, RDCs and local communities are not necessarily interchangeable. The term RD is used to denote the territory of communal area inhabitants (10 000 to 50 000 households) while RDC is the communal area inhabitants' administrative body, which is made up of representatives elected from sub-district structures called wards. The RDC is a legal institution created by an Act of Parliament, the District Councils Act (1980), while local communities have no legal status at all.

Investigating many of the world's long enduring, self-governing resource systems Ostrom (1990) noted that their similarity was the perseverance of these resource systems and their institutions. The institutions, being the framework through which the resource system is managed, should have been responsible for the long endurance of the resource system. Even though institutions do not have to be exactly the same in each and every resource system they have some common sustaining characteristics that enable them to yield sustainability in the resource systems. Ostrom (1990) calls these sustaining characteristics design principles of robust institutions. Technically, a "design principle" is defined as a conception used either consciously or unconsciously by those constituting and reconstituting a continuing association of individuals about a general organising principle (Ostrom 1995). Even though Ostrom (1990) does not stress the necessity and sufficiency of the existence of these principles in ensuring that the institutions will yield a sustainable resource system we believe that their satisfaction under CAMPFIRE will only help the institutions to make the resource system sustainable rather than harm it. To alleviate the CAMPFIRE problems highlighted earlier, the starting point in search for reform that should be made in CAMPFIRE would be an investigation of the extent to which Ostrom's design principles are satisfied. Reforms would then be formulated with the intention of ensuring that the design principles for sustainability are satisfied. Our interest in the rest of this paper is investigate the extent to which the institutions under CAMPFIRE satisfy the design principles of robust institutions and recommend broad reforms that should be made in CAMPFIRE.

2. Does CAMPFIRE Depict Design Principles Illustrated By Long Enduring Common Pool Resource Institutions?

In this section we investigate the extent to which the property rights regime being used to manage wildlife in Zimbabwe's rural areas satisfies the design principles of robust institutions. We will discuss each design principle at a time indicating the extent to which it is satisfied in CAMPFIRE.

1. ***clearly defined boundaries*** – individuals or households with rights to withdraw resource units from the common pool resource and the boundaries of the resource itself must be clearly defined.

It is important to ensure that a property rights regime has clearly defined boundaries of the appropriators, i.e. individuals or households with rights to withdraw units from the common pool resource, and clearly defined boundaries of the resource to be managed. If either of the two boundaries remain uncertain then no-one knows what they are managing or for whom. Without clearly defining the resource boundaries and successfully excluding outsiders, there is the risk that any benefits produced by the local appropriators through their own efforts will be reaped by others who do not contribute to these efforts – the free riding problem. Depending on the extent of the free riding, those who invest in the resource may not receive as high a return as they expected or as would give them enough incentive to continue managing the common. At the worst, the actions of the free riders could bring about the 'tragedy of the common' (Ostrom 1995). Apart from simply clearly defining the resource and governance boundaries it is important to ensure that, to the extent possible, those boundaries are consistent with each other. Boundary congruency would serve to bring the area of decision making into line with areas of ecological interaction lest decisions taken by the appropriators have only a partial effect on the ecological system or be in conflict with decisions made elsewhere about the remaining parts of the ecological system (Hanna, Folke and Mäler 1995).

In principle, all the residents of a RD qualify as appropriators of the common pool wildlife resource by virtue of the RDC holding the AA status under CAMPFIRE. However, it is not necessarily the case that the group of individuals or households with rights to the resource is the same as the residents of the RD hence each RDC designates the wards[5] and villages that should be regarded as appropriators of the common pool resource. Appropriation in the case of the common pool wildlife resource under CAMPFIRE entails the receipt of revenue from CAMPFIRE wildlife based activities since utilisation has mainly been limited to tourism and trophy hunting, a practical preserve for foreigners. The criterion for choosing the wards and villages has usually been proximity to wildlife routes and bases. The rationale is that wildlife has access to assets of those who are living close to it and hence if there is any destruction it is most likely that it is perpetrated against the wards and villages in the vicinity of wildlife. Indeed, the philosophy behind CAMPFIRE is to, at least partially, compensate those who bear the costs of living with wildlife. In most RDs only a fraction of the total number of wards and villages has been designated as appropriators of the resource. For the 23 RDs for which data exists 29,63% of the total wards have been designated as CAMPFIRE wards. Both in principle and practice, the boundaries of the individuals or households with rights to withdraw units from the common pool wildlife resource under CAMPFIRE is clearly defined since the RDCs, wards and villages do not overlap.

The accordance of AA status to the RDCs opened the resource to outsiders and thereby imposed a passive tax on the resource. The RDC, which is made up of representatives from all wards in the RD, makes management and appropriation decisions about a common belonging to that fraction of the wards that have been designated as appropriators. This allows outsiders, those representatives from the non-appropriator wards, to make wildlife management and appropriation decisions about a common that does not belong to their constituency. The current problem in excluding non-appropriator wards from the common pool wildlife resource is that sub-district communities are not organised as corporate or legal bodies hence cannot legally own the common. In cases where the RDC retains some benefit from the common pool wildlife resource this retention can be viewed as constituting a benefit to outsiders. If the whole RD should sufficiently benefit from the resource invested in by a few wards then "the closer the situation is to that of a one-shot dilemma where the dominant strategy of all participants is to overuse the resource" (Ostrom 1995, p36). The threat of overuse becomes more likely where the fraction of retention by the RDC is large. Revenue allocation data for the period 1989-1998 for all RDs shows that only 50,46% of the revenue was distributed to the sub-district communities (*see table 2 in appendix*). Thus the non-appropriator wards could also benefit once these retained funds are used for general district administration.

One possible situation in which management of the common pool wildlife resource at the RDC level may not work is when people in neighbouring wards that each lie in adjacent RDs are from the same ethnic group and give superiority to traditional ethnic institutions over modern political administrative institutions. The fact that traditional ethnic boundaries are not necessarily aligned with the modern political administrative boundaries means that when it comes to active management of resources these people would follow their traditions in doing so just like they follow traditions in dealing with daily problems. The resolutions passed by

[5] A ward is a sub-district administrative unit that is made up of about six villages or at least 600 households. The current definitions of ward and village were established when the ward development committee (WADCO) and village development committee (VIDCO) were created in 1984 by a Prime Minister's directive, as opposed to an Act of Parliament, and as such do not have legal status.

each of the RDCs independently to be carried out by their respective wards will most likely not both succeed if they contradicted one another since the traditional institutions for this ethnic group would decide what course of action to take thereby making at least one of the resolutions to fail. The incorporation of traditional chiefs as an interest group in the RDCs in the 1990s does not help this situation since they are always in the minority in RDCs which are purported to be governed by modern democratic institutions rather than traditional institutions. The good thing about this ethnic group scenario is that it will unconsciously bring about useful, though informal, coordination in the management of the common pool wildlife resource especially if the ethnic group adopts the pro-wildlife resolution. It is unlikely that this would happen where the extent of free riding is large.

It is difficult to define the boundary for migratory species that move across villages, wards and districts. Any attempt to define boundaries will therefore largely be along the habitat lines. Under CAMPFIRE, the resource boundaries have been defined so that they conform to the geographical boundaries of the RDs. This has been necessitated by the need to align the resource boundaries with the governance boundaries created by the granting of the AA status to RDCs. It is not necessarily the case that the RD boundaries are aligned with the ecological boundaries of the common pool wildlife resource. If anything the RD boundaries are politically motivated constructs, in which the central government sought ways of getting representation at the grass roots level. Indeed, political administrative borders are completely arbitrary from the perspective of wildlife management in Zimbabwe. There is nothing to suggest that wildlife respects politically determined boundaries. As a result, it happens that at times some villages, wards and RDCs extract benefits not only from that wildlife that falls under their jurisdiction but that they also extract benefits from that wildlife that falls under the jurisdiction of other villages, wards and districts. The resource ownership conflicts between villages, wards and districts have normally been resolved by requiring that the wildlife resource's residence be determined upon death i.e. it belongs to the village, ward and district on which it eventually dies irregardless of where it has all along been living and causing destruction. Thus even though the resource boundaries may not have been the best possible, they have been clearly defined under CAMPFIRE by insisting on conformity with the geographical boundaries of the RDs and post-mortem residence assignment.

We have alluded to the need for the synchronisation of governance boundaries with ecological boundaries as one condition for the effectiveness of a property rights regime. We reiterate that this is a useful way forward because wildlife, being fugitive, may have inter-village, inter-ward, inter-district or inter-regional dimensions that require coordination (Hanna, Folke and Mäler 1995). In some CAMPFIRE areas coordination amongst RDCs has been forthcoming especially where they share a significant wildlife reserve. For example, in the north-eastern border of the country three RDs, namely Mudzi, Uzumba-Maramba-Pfungwe and Rushinga are jointly managing wildlife in the shared Nyatana Wildlife Reserve. Ecological boundary demarcation should take precedence over governance boundary demarcation so that management decisions have a complete effect on the ecological system and that they do not conflict. In the event that there is no readily available legal governance boundary such a boundary should be put in place. Of course, it is possible within this framework to subdivide responsibilities in resource management by assigning tasks to subdivisions of the governance. After all it has been shown from an analysis of experience that local users are effective managers of small-scale resource systems (Ostrom 1995). The crucial requirement that should be placed upon such subdivisions of governance is that they should be coordinated so that everyone knows what others are doing about a part of the larger ecological boundary. The difficulty in demarcating ecological boundaries for migratory

species could be a lesson that in some cases the potential coordinating units may not necessarily fit into the borders of RDs i.e. several villages and wards in various RDCs may be the units that need to be brought together to manage a certain common. Insisting on the guardianship of the wards and villages' parent RDCs could take away the advantages of managing commons at the level that is local to the resource. In this regard, without reinventing the boundaries of the appropriate authority, partnerships of adjoining RDs could be encouraged and the truncation of partnerships being determined by the extent of habitats.

If governance boundaries should be reinvented then more considerations have to be made unlike in the traditionally analysed commons such as irrigation systems, inshore fisheries, mountain grazing lands and forests. Conservationists have pointed to the need to manage entire ecosystems by unified methods designed to save all their inhabitants at one time, thereby economising on tightening conservation budgets, achieving economies of scale and efficiency. However, the absence of a consensus definition for ecosystem management frustrates conservation efforts coupled with the lack of consensus about what constitutes a healthy ecosystem. Also, the fact that various ecosystem processes are maintained even as species disappear is but one aspect that works against focusing on conserving ecosystems rather than on conserving species. Since monitoring and managing all aspects of biodiversity that might interest us including species richness and composition, physical structure, and processes are so difficult, a variety of shortcuts have been proposed whereby attention is focussed on one or a few species (*see Simberloff (1998) for more details*). Umbrella species are those with such demanding habitat requirements and large area requirements that saving them will automatically save many other species. However, whether many other species will really fall under the umbrella is a matter of faith rather than research. Keystone species, at least in some ecosystems, have significant impacts on many others. Since a keystone species approach is focused squarely on an understanding of the mechanisms that underlie the function and structure of an ecosystem, it appears that it might suggest entirely new ways of managing a problem, rather than the successive-approximation approach that dominates adaptive management (Simberloff 1998). In Zimbabwe, "the elephant[6] population is probably the single greatest factor influencing ecosystem conservation in protected areas" (DNPWLM 1999). Perhaps this points towards that governance boundaries under CAMPFIRE should be along the lines of ranges of elephants (and other keystones) and take refuge in it being both a keystone and umbrella species.

2. ***congruence between appropriation and provision rules and local conditions*** – appropriation rules restricting time, place, technology, or quantity of resource units should be related to local conditions and to provision rules requiring labour, materials, or money.

African wildlife ecological systems are subject to great variation depending on drought and environmental factors (Hasler 1999). Establishing a link between appropriation rules and local conditions helps to institutionalise heeding the feedback effects from the ecosystem to enhance sustainability. If a community must benefit from its wildlife in the long run then the wildlife harvest quota must be sustainable. The number of key species in Zimbabwe has been relatively stable or increasing (Child, et al 1997) and habitat loss has been held back in those areas where CAMPFIRE exists. Within and around national parks, elephants exceed their carrying capacity of five individuals per square kilometre and woodlands are under severe

[6] Elephant trophy hunting was largely unaffected by the 1989 CITES ban on trade in elephant products because the ivory and other elephant products are considered the personal property of the client. Furthermore, within the duration of the ban, Zimbabwe had an annual CITES quota for trophy hunted elephant of 500 animals (WWF SARPO 2000, p2.23).

pressure (Royal Netherlands Embassy 1998). Hasler (1999, p14) points out that, "hunting quotas in CAMPFIRE areas are considered to be conservative". This may have emanated from the following factors: (i) the DNPWLM often used "population and growth rate estimates [that] were inaccurate" (WWF SARPO 2000, p3.17), (ii) the DNPWLM did not take into account the number of animals that the communities wanted in their areas, and (iii) the "setting of quotas is primarily aimed at identifying annual 'sustainable' offtake for the safari industry" (Murombedzi 1992, p31), which are generally lower than quotas for non-selective hunting. However, there is increasing convergence between the quotas that the DNPWLM sets and what the RDCs expect.

It is important to note that if the local communities are to take an interest in managing the wildlife resource they must be able to get a reward for their conservation efforts. A direct link between reward and provision of conservation is established by aligning appropriation and provision rules. Wildlife is a unique resource that does not require the usual provisions. However, damage that people put up with, guarding fields from wildlife intrusions, protecting fields with thorn-bush fences, and looking out for poachers constitutes some kind of provision. Ideally those who render the highest proportion of provision should reap a greater proportion of the benefits. Over and above that, the local communities may need to be compensated for foregoing some opportunities for economically more rewarding uses of land within their territory. The benefits under CAMPFIRE consist primarily of the utilisation of the wildlife harvest quota, though increasingly other projects of a social and economic nature are being added to the benefit matrix. Under CAMPFIRE, the twelve[7] RDs that are adjacent to protected areas, and thus suffer more nuisance, have the potential to earn more income than those removed from these core biodiversity areas. However, within all RDs, the benefit from wildlife utilisation at the household level has been highly variable with sparsely populated wards having the potential to earn more than those that are densely populated. "The average CAMPFIRE ward dividend benefit per household (excluding indirect benefits) was US$19,40 per household in 1989 but dropped in 1991 to US$5,97 and then to US$4,49 in 1996" (Hasler 1999, p12). The drop in this variable, which was US$3,05 in 1998, is largely due to the increasing number of households joining the programme in low wildlife potential areas.

One threat to the long-term sustainability of local institutions is the availability of large quantities of funds from external authorities that appear to be "easy money" (Ostrom 1995). These can undercut the capabilities of a local institution to sustain itself over time. The problem of local units becoming dependent on external funding is not limited to the funding provided by international aid agencies (Ostrom 1995). The rationale for such external funding is that the larger Zimbabwean or global society must mobilise additional resources to raise the level of conservation efforts towards socially desirable levels. This is because conservation of wildlife resources includes retaining options for future economic use, or ethical or aesthetic grounds, and simply assuring access to villagers for immediate use would lead to socially sub-optimal levels of wildlife conservation (Gadgil and Rao 1995). Depending on the conduit through which vast amounts of external funds replace programme-generated resources, the connection between provision and appropriation is lost. Individuals using "other people's money" are rarely as prudent as when they are using funds derived from themselves and their neighbours (Ostrom 1995). Ideally, external aid should constitute additional demand for conservation by outsiders, over the locally determined levels, and the

[7] The major wildlife districts in Zimbabwe are Hwange, Tsholotsho, Chipinge, Binga, Gokwe North, Guruve, Beitbridge, Bulilimamangwe, Chiredzi, Nyaminyami, Hurungwe and Muzarabani.

funds should be channelled directly to the producer communities so that they respond to this incentive emanating from increased demand for conservation.

Processes that encourage looking to external sources of funding make it difficult to build upon indigenous knowledge and institutions (Gadgil, Berkes, and Flokes 1993). This is unfortunate especially if traditional institutions are more likely to lead to greater conservation than modern institutions. If those at a local level ask for funds repeatedly, those at a national or international level have an excuse to exert more influence over what is happening at a local level. As central officials begin to finance and take a more active role, those at a local level may pull back even further, thus accelerating a process toward central dominance (Ostrom 1995).

The effect of donor funds in CAMPFIRE[8] may be viewed as having been two-pronged but in both ways affecting the congruence between provision and appropriation. On one hand donor funds may have acted to stifle the formation of traditional institutions which would have reduced the costs of running the programme (particularly the use of game scouts, communication radios, guns, cars, and generally the RDC CAMPFIRE office in monitoring) and thereby increase the financial benefits to communities hence positively affect stewardship practice. Murombedzi (1997, p16) concurs that, "external aid seems to have negative implications for the ability of CAMPFIRE to facilitate local community participation in decision-making". By providing the requisite operating capital and sponsoring skilled labour[9], external aid resulted in the development of sophisticated top-heavy management structures aimed at managing wildlife, carrying out problem animal control (PAC) and other crop protection measures and entering into wildlife exploitation joint ventures with safari operators. Such institutions resulted in increased technical management capacity for the RDCs to manage the resource at the expense of the basic tenet of CAMPFIRE, namely local communities' participation in the management of the resource. In the presence of external aid, sub-district devolution did not and might never take place leading to the persistence of the current scenario in which sub-district communities receive insignificant dividends without expending any conservation effort beyond the damages suffered from wildlife. Experiences from RDs such as Nyaminyami, Guruve, Binga, Tsholotsho, Bulilimamangwe and Hwange show that local community participation was not enhanced by the presence of external aid (Murombedzi 1997). In light of the foregoing, and if the highly technical structures were indispensable, the publicised success of CAMPFIRE may have been very artificial since only the funds from donors kept the programme floating. Without donor funds one would envisage a near collapse of the programme because it has been spoiled by external funds inflows and has not learnt to be self-sufficient in the last decade.

On the other hand donor funds may have helped CAMPFIRE to kick off without the problems of inadequate incentives that it could have faced in the absence of donor funds. For instance, in 1989 Zimbabwe Trust subsidized Nyaminyami Wildlife Management Trust – a sub-committee of the Nyaminyami RDC charged with managing the wildlife resource – to the tune of Z$171,000 (approximately US$80,433) as well as services of an interim general manager thus freeing revenue to pay the communities, which would have been impossible

[8] CAMPFIRE was backed by at least US$33 million for a ten-year period from 1989-1999 in funds from the United States, European Union, United Kingdom, Norway, Netherlands, Germany and Japan (Patel 1998).

[9] For example Zimbabwe Trust, an NGO funded by the British Overseas Development Association (ODA) and blocked funds of former Zimbabweans exiled in the United Kingdom and USAID, provided grants to RDCs for infrastructural and capital development, training, recruitment and funding of RD level Institutions Officer in Guruve and Nyaminyami (Murombedzi 1997).

and probably affected the continuance of the programme in Omay communal lands (Murombedzi 1997). Despite having been channelled indirectly through NGOs and other participating organisations, removed from the local communities, the donor funds managed to provide some incentives by way of community development, applied research, regional communication, project management, project evaluation and wildlife conservation. These overheads would otherwise have been paid from CAMPFIRE revenues thereby reducing disbursements to producer communities and negatively affecting stewardship practice (*see table 1 in appendix for CAMPFIRE incomes*). Given that wildlife conservation largely depends on stewardship practice any of these effects actually realised would have affected the course of wildlife conservation and sustainability somehow. Murombedzi (1997) shows that two villages, Mahenye in Chipinge RD and Chikwarakwara in Beitbridge RD, managed to kick off without any external aid. Despite the absence of external aid in these villages, local community participation has been negligible also mainly because of the 'paternalistic' tendencies of the RDCs. We insist that incentives for conservation of a resource should come from that resource for sustainability given that donor funds will not continue to flow inwards in the long term. For the reason that they are short term and that they are obscured from the local communities who are the resource producers, donor funds mismatch provision and appropriation.

3. ***collective choice arrangements*** – most individuals affected by operational rules should participate in modifying operational rules.

A regime functions best when decision rules are consistent with ownership, for example, when collectively owned resources are managed through collective choice arrangements (Hanna, Folke and Mäler 1995). Collective choice arrangements allow resource institutions to tailor better their rules to local circumstances since the individuals who directly interact with one another and with the resource can modify the rules over time so as to fit them better to specific characteristics of their setting (Ostrom 1995). In CAMPFIRE there has not been much room for collective participation in the making or modification of operational rules for three reasons. Firstly, most operational rules were designed by the DNPWLM when it initiated the CAMPFIRE programme. These rules were to become CAMPFIRE "guidelines" and all RDCs are expected to follow them in as much as their situation permits. Secondly, the nature of the dominant wildlife resource utilisation strategy in Zimbabwe is such that it is reserved for an international trophy hunting market. Local communities have been inhibited from participating by the nature of the high skills (professional hunting and marketing) and capital (finance and equipment) and foreign clientele required. For instance, Guruve RDC experimented safari operations without much success. Thirdly, the fact that the RDC constitutes of representatives democratically elected by the grass roots has been interpreted to mean that the RDC can act on behalf of the local communities and they do not need to participate in any other form except through their representative.

The market orientation of CAMPFIRE precludes the use of indigenous knowledge, customs and strategies of resource management thereby relegating the role of RDCs to that of providing services to the private safari enterprises (Murombedzi 1992). The RDCs have had to ensure that a viable resource base exists for exploitation by the private safari operators by policing local insurrection such as poaching, haphazard expansion of arable agriculture, human settlement in wildlife habitats, livestock population expansion and non-acceptance of the status quo. The programme primarily seeks to produce a financial dividend and thereby curtails the ability of the local communities to define their own resource management objectives. In most CAMPFIRE areas the communities are not in contact with the actual

resource for as far as monitoring, marketing and harvesting is concerned. This reality does not give them an opportunity to contribute in the making and modifying of operational rules. Under CAMPFIRE, after receiving the quotas from the DNPWLM, the RDCs as the AA decides how many animals to put under trophy hunting, PAC, cropping, live animals sales, culling and local hunting – with most animals usually being put under trophy hunting because of the need to produce a financial dividend. The RDCs will then market and sell hunting concessions/leases to private non-local safari operators. The safari operators will find clients of their own so that they make profit on the hunts that they have claims to. The clients then carry out the actual hunting through the engagement of a Zimbabwean registered professional hunter. If communities were to harvest the resources in the concession area that would be illegal because the rights will have been surrendered to the safari operator through the lease agreement. The RDCs collect the trophy fees and concession/lease fees as the benefit from the resource. The local communities rarely get resource allocations for cropping and local hunting. At times they may get some meat if large animals such as elephants are hunted because the safari operator or client does not have use for it apart from the parts collected as trophy. The communities will get the benefit from the use of their resource when the RDC disburses revenue. Communities have always charged that resource utilisation is an RDC-safari operator affair and it leaves the communities out. Local communities have usually only been given a chance to participate in deciding how their share of wildlife revenues could be used. Child, *et al* (1997) gives an account of how Chikwarakwara village in Beitbridge RD spent four days gathered under a baobab tree democratically deciding how to use their share (Z$60,000) of 1989 revenues (Z$96,000), which they finally decided to use on school infrastructure, household dividend and setting up a village grinding mill. Murombedzi (1997) witnessed the same village refusing to accept its share (Z$19,000) of 1991 revenues (Z$142,170) because it felt that the RDC wanted to impose its own decisions on them by suggesting that the village decision to invest in a grocery store was not viable. In general, RDCs have been accused of being too 'paternalistic' in that they usually ask the communities to identify viable projects/programmes in which they would want to invest their shares of wildlife revenues before the revenues are released. Even though the objective of local government in Zimbabwe is to provide accountable and democratic government for local communities, it is because of this possibility of lack of downward accountability (and presence of upward accountability) that the RDC and the communities could be thought of as different entities that optimise in different ways. It is therefore for this reason that the real owner of the wildlife is thought to be the communities, as opposed to the RDC, and as such communities should participate in the collective choice arrangements.

4. ***monitoring*** – monitors, who actively audit resource conditions and appropriator behaviour, should be accountable to the appropriators or are the appropriators themselves.

The challenge for the design and performance of property rights regimes is to ensure those making decisions have the appropriate incentives to take ecosystem equilibrium shifts into account and make the appropriate trade-off between the costs and benefits. This requires that decision makers do benefit from monitoring appropriation and feedback from the ecological system and ensuring that appropriation allows perturbations to enter the system at a scale that allows subsystem variability but does not challenge the underlying ecological and economic activity (Berkes and Folke 1994). Essentially, monitoring should be conducted with respect to resource condition (species diversity, wildlife populations, age class structures, cross boundary movements, problem animals, wildlife health, trophy quality, habitat condition, etc) and appropriator behaviour (settlement patterns, fire management, uncontrolled hunting, etc).

Such monitoring is likely to be effective if done by the appropriators themselves or monitors who are accountable to the appropriators because that ensures that there would be an immediate reaction to collected data. Being localised such monitoring is likely to extract information about the resource and appropriator behaviour accurately and timely. Also all the necessary monitoring is likely to be conducted since it would be cheap to do so unlike if the monitor was external who could decide to forgo some monitoring routines to reduce costs. Thus monitoring by local communities constitutes one way to reduce costs and dependence on donor funds. The DNPWLM and the RDC need trucks, helicopters, skilled manpower, etc to carry out state-of-the-art monitoring hence the need for high capital. Communities could render monitoring cheaply since the costs of monitoring at a local level are lower as a result of the rules-in-use (informal rules). Rules-in-use stem from the traditional systems of beliefs and taboos, where the ancestral spirits are responsible for enforcement. Of course the costs and benefits of monitoring a set of rules are not independent of the particular set of rules adopted (Ostrom 1995). If the set of rules adopted are modern rather than traditional it does not imply negligible costs of monitoring them. It is likely that the local communities will take refuge in the traditional systems of resource management. Even though communities have been alienated from the wildlife resource for a long time the traditional resource management systems have not been completely destroyed since other resources continued to be under the guardianship of the communities.

The case of CAMPFIRE is such that the DNPWLM, with the help of the WWF that carries out aerial wildlife surveys for communal lands, has effectively been responsible for monitoring the resource condition. This has been necessary because the DNPWLM has to determine the wildlife harvest quota and it has the expertise. Quotas are set using a system called triangulation, which involves assessing information from three sources – (i) aerial surveys, (ii) ground counts, and (iii) trophy measurements as well as stakeholders' opinions. The DNPWLM has encouraged the RDCs to acquire the necessary skills so that they can take over as is required by their AA status while the DNPWLM would sit back and assume the role of regulator. Zimbabwe Trust, WWF and the Safari Club International have facilitated training workshops and rendered technical assistance, particularly for quota setting. Since 1995, in some areas such as Omay communal lands, the RDCs and communities started learning about quotas, counting wildlife and trophy quality assessment, and how to review information on wildlife in order to set quotas (WWF SARPO 2000). Most RDCs, for example Muzarabani, Guruve, Chipinge, Gokwe North, UMP Zvataida, Binga, Hwange and Nyaminyami, have employed game guards who have been trained and equipped to monitor the state of the resource, carry out problem animal control, carry out anti-poaching campaigns, and monitor the interaction between local communities, safari operators, safari clients and the resource. Some sub-district communities, particularly in areas where benefits have been high, have appointed voluntary resource monitors who are also tasked with monitoring appropriator behaviour in their areas. There is an increasing role for the game guards and voluntary resource monitors in the monitoring of the resource as RDCs are now asked to set and propose quotas for their areas. However, the DNPWLM still has to approve and adjust, where necessary, the proposed quotas. In this framework the appropriators (the RDC and the communities) have had to be accountable to the effective resource monitor (the DNPWLM). Sub-district communities submit their reports to the RDCs, which in turn submit their annual reports to the DNPWLM before the quota for the following year could be disbursed. As a matter of fact the monitoring conducted by the DNPWLM focuses on three areas namely, (a) setting of quotas, (b) ensuring that revenues are returned to producer communities as the incentive for sustainable management, and (c) the following of informal "guidelines" aimed at promoting economically sound and democratic wildlife management.

The monitoring of appropriator behaviour has largely been relegated to the RDCs in line with the AA status. Since authority over use and benefits from wildlife ultimately belongs to them, the RDC and its CAMPFIRE wards constitute the appropriators even though safari operators and their clients carry out the actual hunting. In general, appropriators are expected to monitor each other's behaviour and the behaviour of poachers even though the scope of use of monitoring information provided by other groups is limited.

The role of RDCs and communities in resource monitoring could greatly be increased if they know that the information they provide will actually be used. Even in areas where local communities perform ground surveys it has tended to be the case that the DNPWLM makes 'big game' harvest quota decisions predominantly on the basis of aerial surveys it conducts in collaboration with the WWF, assigning less weights to ground surveys as they are usually thought to give population indices only rather than population estimates. Aerial surveys rely on estimating wildlife numbers from sample counts and use of indicators to ascertain whether the population is stable, increasing or decreasing. In general sample counting relies on animals being evenly distributed and if they are not then this can lead to inaccurate population estimates (WWF SARPO 2000). Local communities have always accused the DNPWLM of setting wildlife harvest quotas conservatively. However, with the increasing role accorded to RDCs in quota setting there is an increasing convergence between the quotas that the RDCs propose and what the DNPWLM eventually approves.

5. ***graduated sanctions*** – appropriators who violate operational rules should be likely to receive sanctions depending on the seriousness and context of the offence from other appropriators, from officials accountable to these appropriators, or from both.

Commitment to the observance of operational rules in many sustainable community-governed resources cannot be explained by external enforcement since external enforcers rarely travel to remote areas. Instead appropriators create their own internal enforcement to (a) deter those who are tempted to break rules, and thereby (b) assure quasi-voluntary compliers that others also comply (Ostrom 1995). In case there are rule infractions sanctioning is largely carried out by the appropriators themselves or their appointees. Even though the RDC and communities in CAMPFIRE could be thought of as appropriators there are other two agents who have access to the common pool wildlife resource namely external poachers and safari operators. Violation of operational rules primarily constitutes the illegal harvesting of the wildlife resource. Thus, infraction of operational rules could potentially be committed by appropriator-poachers, external poachers and safari operators. Appropriator-poachers are usually involved in subsistence poaching while external poachers and safari operators could be engaged in commercial poaching. In subsistence poaching wildlife products are for consumption while commercial poachers primarily hunt trophy for sell at a market. Commercial poachers who are usually outsiders employed by dealers include carriers and professional hunters armed with automatic weapons and often hunt deep into the protected areas. Subsistence hunters hunt in small gangs in areas relatively close to their homes and use primitive firearms, spears, snares and dogs. Subsistence hunters have close historical, traditional and cultural ties to wildlife hunting and subsistence hunting is a skill and profession that has an important social role, and the number of hunters in each generation is controlled by the community elders (Marks 1984, Skonhoft and Solstad 1996). Under CAMPFIRE individuals have the right to utilise wildlife as part of a community as sanctioned by the RDC hence wildlife utilisation by individuals is still illegal. Poaching by appropriators is indicative of two aspects namely (i) the local resistance to the exclusion from direct household utilisation of the resource that brings about costs, and (ii) the competing property

claims to the resource between the RDC and communities. Local institutions cease to function to regulate such use and the tendency is towards the operation of open access (Murombedzi 1992). It therefore becomes difficult to come across instances of community regulation of this illegal activity. Murombedzi (1992) reports that knowledge of the existence of poaching activities is universal in the Nyaminyami communities he studied even though no-one dared to punish these subsistence poachers.

According to Milner-Gulland and Leader-Williams (1992a) illegal harvesting of wildlife of the subsistence type depends on factors such as the detection rate, the size of the penalty for being caught, the money income in alternative activities and the size of the stock of wildlife. A greater anti-poaching drive, higher penalties and a higher opportunity cost of poaching help to reduce poaching (Skonhoft and Solstad 1996). We maintain that both types of poaching will be high when there is a low level of community co-operation (monitoring) in wildlife management. This is mainly because external monitors such as the parks agency will not find it profitable to invest fully in insurance against poaching and also because the poachers are supported and tolerated by the local communities. Community co-operation itself is a positive function of the net benefits from wildlife. In other words the absence of net benefits from wildlife entail that there is high grazing competition and damage from wildlife and the local community will be angry about the existence of the wildlife resource hence the more they will support and tolerate poachers. Evidence from Zimbabwe shows that poaching was rampant in some areas prior to the introduction of CAMPFIRE but was drastically reduced afterwards as the neighbouring communities started reaping economic benefits from wildlife (Cumming 1989).

The problem of existence of sanctions is part of a broader weakness of the property rights regime under which wildlife is managed under CAMPFIRE. Common pool wildlife resource management is usually based on some form of legal and recognised utilisation, out of which the need to regulate or manage arises i.e. the appropriators have to develop the management institution out of direct and acceptable utilisation. Direct utilisation of the resource is reserved for outsiders under CAMPFIRE namely safari operators and their clients. Local resistance to the exclusion from the direct consumptive utilisation of the resource and the apparent competing property claims to the resource between the RDC and communities will therefore emanate in communities condoning subsistence poaching. In the experience of CAMPFIRE, only those communities that have benefited so much at a household level have opened their eyes to poaching and made reports to the relevant local wildlife committees if animals involved are large game on which the programme relies for income generation. Due to the fact that the zero hunting option is not historical, traditional and cultural some subsistence hunting has been condoned by the society if it relates to the usually hunted smaller game such as guinea fowl, klipspringer, spring hare, buck and antelope and if it is strictly for home consumption. Generally the small game populations are large and can thrive despite subsistence hunting offtakes. This absence of scarcities perhaps helps to explain why there has not been any serious community regulation.

In the traditional African religion sanctioning with respect to misuse of natural resources such as unwarranted hoarding and killing what one cannot consume comes from the ancestral spirits and community elders. If one was caught violating rules the reprimand would be meted out by the community elders. Besides, the ancestral spirits that are always on guard would punish anyone violating rules irregardless of whether they are caught or not. Individualistic sanctions meted out by the ancestral spirits could be in the form of destruction of one's crops by wild animals or bad luck. Similar to what Berkes (1987) narrates in the case

of Cree hunting, one who violates rules could suffer loss of favour from animals while hunting and one could also be subjected to some kind of social disgrace. Some punishments are society-wide, for example poor rains, such that every member of the community has to refrain from infractions for the good of the society. Subsistence hunting always takes place within the realm of traditional African religion and appropriator-poachers in CAMPFIRE while violating CAMPFIRE rules of zero household use are not breaching any traditional rules hence are protected from sanctions by the community. We could state that there has been a high tolerance zone for infraction of operational rules by appropriators. Beyond that tolerance level, when one starts violating both traditional and CAMPFIRE rules, members have been issued warnings after which they would get graduated sanctions through the modern criminal court system.

The law that assists wildlife management in Zimbabwe allows game wardens to curb particularly commercial poaching even by shooting poachers. Child (1995) narrates a situation in which poaching was severe in Mahenye village in Chipinge RDC before the inception of CAMPFIRE. Hunting was a way of life for these people and they resented the Park for denying them rights to use the resources and for isolating them from others of their tribe. In one fortnight in 1982, through the efforts of the DNPWLM, there were about 80 convictions against people in the community, which did nothing to reduce their antagonism towards the Park (Child 1995). It seems that these people were hunting relatively big game, which would also been unusual in the traditional African culture. A safari hunter and rancher brokered an agreement between the DNPWLM and Mahenye's people, whereby he could shoot a small quota of elephant, buffalo and nyala crossing out of the Park (Child 1995). The people would receive the meat and all the revenue in exchange for not poaching. As a result of these measures poaching decreased sharply signaling that the motive for the initial poaching may have been commercial. In general, commercial poaching particularly of the elephant intensified since the 1989 CITES ban, apparently because law enforcement was curtailed due to reduced Treasury allocations, to which the loss of ivory revenue had contributed. From 1984 to January 1993, the DNPWLM's Operation Stronghold resulted in the deaths of 167 poachers and the wounding and capture of 137 others (Child et al 1997). In areas where communities have been compensated fairly, CAMPFIRE has allowed the commercial poaching levels to subside since communities are now also helping with enforcement. In most cases the sanctions imposed on external commercial poachers have not been graduated since death has been applied. For those that have been arrested they have been tried through the criminal court system, which imposes graduated sanctions.

Under CAMPFIRE a strict system has been put in place to discourage the safari operator from hunting illegally. Once a safari operator has been selected the RDC develops a contract, specifying key terms and conditions to be followed, which the safari operator and the RDC signs and the hunt return form, which is basically the permit to hunt. The contract, which is usually for five years, is binding in law and may take the form of a concession, lease, joint venture or any other arrangement that has been negotiated between the RDC and the safari operator. Some of the terms and conditions specified in the contract could be that the designated safari operator should complete a hunt return form in respect of each client to be returned to the RDC within 30 days after expiry of the permit. The holder should comply with the requirements of the Parks and Wildlife Act (1975,1982) and regulations and with any relevant RDC by-laws issued with respect to access to the wildlife in the area. There could be conditions on disposal of carcasses or special conditions relating to hunting, for example, that no animals may be shot from a vehicle, no use of aircraft for spotting, no use of spotlights, no hunting at night, etc. Where the sex of the animal has been specified on the

permit, the opposite sex of the same species should not be hunted instead. The hunt return form that is signed by the client and professional hunter conducting the hunt and the RDC records the following information for each animal shot: date shot, whether killed or wounded, trophy size, sex, number of hunt days, etc. Safari operators are also asked to provide a hunting schedule of their activities containing information on the names of client and professional hunter, the proposed bag of animals and the time of the hunt so that the RDC ensures that there are no omissions and that the safari operator does not exceed the quota. The RDC game guards have usually been tasked to monitor the trophy hunting activities of the safari operator. The infractions that the safari operators could potentially commit are (i) under-utilising the quota, (ii) hunting the wrong sex or species, (ii) over-harvests, and (iv) using bad harvesting techniques. The RDCs have always been encouraged to incorporate penalties to discourage these infractions in the contract. When the infractions become then the sanctions will be as per the penalties in the contract. The penalties have been usually graduated i.e. depended on the seriousness and context of the offence. Repeated violation of operational rules only dampens chances of renewing the contract in the future and earns the safari operator a bad reputation in the safari industry.

The DNPWLM can reduce the next quota for the RDC that has exceeded its previous quota.

6. ***conflict resolution mechanisms*** – appropriators and their officials should have rapid access to low-cost, local arenas to resolve conflicts among appropriators or between appropriators and officials.

The potential conflicts in CAMPFIRE involve property rights over wildlife, designation of buffer zones for wildlife, the nature of acceptable use of wildlife vs compensation for damages, representation in wildlife committees, distribution of revenues and the nature of acceptable use of revenues. Just as we motivated in our discussion of the prevalence of poaching there are competing property claims to the wildlife resource between the RDC and communities. The RDC derives property claims to the wildlife resource from the AA status that it has been accorded by the Parks and Wildlife Act (1975,1982). Citing instances of corruption and embezzlement of funds that have been engaged by officials, dissatisfaction about the transparency of the elected councillors' deliberations with local officials through the District Wildlife Committees (Hasler 1999) and exclusion from direct household management and utilisation of wildlife (Murombedzi 1992), communities emphasise the dichotomy between their RDC and themselves hence derive property claims to wildlife from traditional heritage, proximity to wildlife and suffering wildlife perpetrated damages. In most areas this is an unresolved conflict, whose only solution lies in the RDCs emulating the good gesture done by the central government and surrendering their AA status to the relevant sub-district communities by means of by-laws. Hasler (1999) reports that CAMPFIRE influenced resource management in the neighbouring countries but ironically Botswana and Namibia have long left Zimbabwe by putting in place legislation that empowers local communities to manage and benefit from wildlife directly. Zimbabwe's national political environment and the prevailing political culture have been cited as the key obstacles to real devolution of management functions to villages and wards.

In some RDCs, for example Chipinge, Hurungwe, Mudzi and Nyaminyami, some land has been designated as unsettled buffer zones for wildlife, conservancy areas, etc. There have usually been conflicts as to who should decide the allocation of land for such and other uses. While the RDCs have usually designated some areas for the benefit of wildlife conservation some traditional leaders such as chiefs and headman have counter-designated such areas for

human settlement. A notable feature of communal lands in Zimbabwe is that inhabitants do not possess titles to land. The land is communally owned and allocated to households for arable farming and settlement. Historically, allocation of land was the preserve for the chiefs. At independence in 1980, the traditional leader system that had dominated local government during the colonial era was not removed but in terms of the supposedly democratic District Councils Act (1980,1981,1982) the traditional leaders' powers of adjudication and land allocation were transferred to the District Councils because it was believed that they were puppets of colonialists having participated in the African Councils[10], almost the equivalent of the present RDCs. Since the passing of the Rural District Councils Act (1988), purported to end the dual system of local government in rural Zimbabwe through amalgamation of the Rural Councils (formerly representing large-scale commercial farming areas) and the District Councils (formerly representing the communal African farming areas) into 57 RDCs, the traditional leaders in the affairs of RDCs have the role of an interest group together with the commercial farmers. Interest groups participate fully (have power to vote and can be voted). In many areas there is conflict between RDCs and chiefs with regards to power over land allocation. Communities as well as modern sub-district institutions such as villages and wards have to a large extent continued to recognize the chiefs' authority over land and other local natural resources (Murombedzi 1992). The government has recognized the indispensability of traditional leaders and enacted the Traditional Leaders Act (2000) that seeks to give the traditional leaders incentives to work in unison with the RDCs.

It is no secret that many of the communities that have received tangible financial benefits from wildlife support the dominant use of wildlife in CAMPFIRE – trophy hunting. Trophy hunting has been carried out on large game such as elephant and buffalo, which are otherwise highly indivisible if household subsistence hunting were to be permitted on it. Besides subsistence hunting would not be sustainable since it would require large offtake if most households are to benefit given the unlikely scenario that hunters would share their hunt. In some RDCs communities used to and still benefit by getting protein-rich meat from trophy hunted large game in their neighbourhood almost for free. Where the RDCs have decided to sell the meat at exorbitant prices and from locations removed from the producer communities there have been conflicts over use of the wildlife resource. This has been because that policy favours residents of RDCs who live closer to the business centres where RDC offices are situated and areas of which are the nucleus of urbanisation in the RDC. The residents who will have access and afford the meat in that setting would be those who are not living with wildlife i.e. those in non-CAMPFIRE wards. This conflict has deteriorated further in areas where RDCs do not allocate wildlife for cropping purposes. Communities have insisted that whatever uses of wildlife are approved by RDCs some wildlife should be reserved for direct household utilisation through hunting. RDCs have not been allocating much wildlife for cropping purposes because it earns little income at a time when RDCs are increasingly being called upon to be financially self-sufficient hence would want to generate adequate revenue for their communities, some of which they could retain to run the RDC activities. In fact, the government is requiring RDCs to be financially self-sufficient by decentralisation activities without the requisite finance. It is therefore not suprising that most communities who have received CAMPFIRE revenues have been utilising it on social infrastructure such as schools, clinics, roads, bridges, water sources, etc – which should have been provided by the government at some level – centre or local. By allocating more wildlife to uses that generate the most financial rewards, RDCs remove the burden on themselves to provide residents of

[10] They were initially called Native Councils and covered the communal African farming areas. They were subject to central control through a key official, the Native (later District) Commissioner, who was appointed by the central government to be ex-officio President of the Council. The number of African Councils grew over time to 242 by 1980 (Stewart *et al* 1994).

the producer communities with social infrastructure thereby somehow relax the tight budgets that they are supposed to work with. The low rates of devolution of revenues attests to stretching the incomes that the RDCs have at their disposal. Communities on the other hand would like to have some direct utilisation of wildlife out of necessity – wildlife destroys their crops and livestock and reduce livelihood and food security hence with permissible hunting they could have access to supplementary protein rich meat.

Distribution of revenue has generated a lot of interest at many levels. By virtue of holding the AA the RDCs have the right to sign contracts with and receive financial benefits from safari operators for wildlife utilisation. The RDC has the mandate under the AA to decide how to distribute these revenues to its population. The RDCs have always distributed the revenues to those sub-district units that they have designated as CAMPFIRE villages and wards. In some areas the set of these villages and wards has not been the same over time. Various communities have made representations showing cause why they should benefit from the revenues. After the first five years the set of CAMPFIRE villages and wards was almost determined and closed. The RDCs have tended to distribute revenues either equally among all CAMPFIRE villages and wards or on the basis of the site of consumption (killing or capture in the case of translocations) of the animals. Once the revenues are at the village or ward the membership households would decide how to spend them. Expenditure of some revenues has been decided at village levels while some has been decided at the ward level through majority voting by show of hands. As we alluded to earlier, most villages and wards have opted to use the revenues on community level infrastructure despite the keenness by most young members to receive household cash dividends which they would immediately derive satisfaction from through purchase of consumer goods as opposed to future satisfaction that would be derived from a school or clinic. The community infrastructure featured in most cases either because of influence from the RDC or the realisation that only negligible household cash dividends would be possible from the available revenues. Hasler (1999) notes a case where provincial and local government in Matabeleland (one of the eight provinces in the country) favour the establishment of local development projects rather than the distribution of household dividends (common in the mid-Zambezi valley) thereby exerting pressure on local communities to vote against the household dividend.

Even though the presence of conflict resolution mechanisms is not a guarantee that appropriators will be able to maintain enduring institutions, it is difficult to imagine how complex systems of rules could be maintained over time without conflict resolution mechanisms (Ostrom 1995). Under CAMPFIRE the structures are arranged in a hierarchy giving room for conflict resolution of lower structures' disputes by higher structures. The conflict resolution mechanisms are usually quite informal and those who are selected as leaders are implicitly tasked with resolving conflicts. Conflicts that involve the village are resolved by the village wildlife subcommittee while conflicts that involve the village subcommittees and wards are resolved by the ward wildlife subcommittee. The district wildlife subcommittee attends to conflicts involving ward subcommittees and the district at large. The RDC resolves conflicts involving the district subcommittee and the district at large. Inter-district conflicts are resolved by either the DNPWLM or the Department of Administration or provincial political leadership depending on whether they pertain to wildlife or administration or politics. It has been common in some areas to find that conflicts are resolved in any one of the three other channels that are parallel to the CAMPFIRE structures. The initial district administration makes use of VIDCOs at the village, the WADCOs at the ward and the district development committee. Traditionally, the kraal head adjudicates at the village, the headman at the ward and the chiefs at subsets of the district.

Politically, the ruling ZANU PF political party, that has the rural areas as its stronghold, influences the development committees or where it fails to do so uses the cell leadership at the village, branch leadership at the wards and district leadership at the RD. It has not been uncommon that further conflicts are created while trying to resolve others depending on the route that has been taken and perceived legitimacy of that route. Fortunately, recourse to the courts of law can be taken at any level. So arenas for resolving wildlife related conflicts exist within the realm of CAMPFIRE even though there are a lot of redundancies due to the existence and close inter-linkage of other routes. Some members of the communities lack information regarding the appropriate route to use in resolving conflicts.

7. ***minimal recognition of rights*** – the rights of appropriators to devise their own institutions should not be challenged by external government authorities.

It has been observed that appropriators in long enduring institutions devise their own rules that are rather informal from a governmental point of view. External government officials should give at least minimal recognition to the legitimacy of such rules if the appropriators are to enforce those rules and enhance sustainability. Ostrom (1995) notes that in many inshore fisheries, local fishermen devise extensive rules defining who can use a fishing ground and what kind of equipment can be used. In the presence of governmental recognition of the legitimacy of such rules, the fishermen enforce the rules themselves. The presumption by external government officials that only they can make authority rules makes it difficult for local appropriators to sustain a rule-governed resource over the long run since governmental rules are rarely foolproof and exhaustive. Thus, while large-scale governmental agencies such as the DNPWLM are an essential part of the mix of governance units, if these agencies come to dominate decision making through the imposition of force, be it legal, the effectiveness of local organisations is reduced substantially (Ostrom 1995).

Under CAMPFIRE, the RDC's right to devise rules with respect to the exploitation of the approved quota is recognised as long as they do not seek to overturn the rules already promulgated from the DNPWLM. The RDC has a right to decide how to allocate the approved quota under the different wildlife uses. AA status empowers the RDCs to enter into contracts with private organisations for the exploitation of their wildlife, receive all payments directly and carry out their own problem animal control. Equally well the onus is on them to devise rules that help to carry out their own law enforcement and protection of the resource. Despite the fact that most RDCs have chosen to manage and protect the resource by use of trained and armed game guards the option of enlisting members of the sub-district communities has also been an option available to them. The nature of the potential threat from external commercial poachers has necessitated the engagement of trained and armed game guards. Despite the existence of "guidelines" for disbursement of proceeds from wildlife activities drafted by the DNPWLM the RDCs have significant breathing space. RDCs decide who benefits and to what extent. The "guidelines" say the RDCs can retain 5% for general council administration and development and 15% to manage CAMPFIRE in the area while at least 50% of the remaining revenue (with a target of 80%) should be disbursed to producer communities.

With respect to the resource, the rights of a structure at the upper level are recognised first before the rights of the structure at the lower level in the context of CAMPFIRE. Sub-district communities do not have rights to separately devise rules regarding the resource except through their membership in the RDC. In fact, most RDCs employ game guards who monitor the state of the resources, appropriator behaviour and engage in problem animal control. This

has reduced the potentially huge role of communities in resource management to protectors of agricultural activities from wildlife intrusions, victims of wildlife-perpetrated damage, and informants about poaching activities. Communities have been excluded from devising rules regarding access to the resource, magnitude of resource offtake, resource population regulation, acceptable uses of the resource, and resource harvesting technology. However, to a large extent, the sub-district communities have recognised rights to devise rules regarding use of disbursed incomes. Once the RDCs distribute the CAMPFIRE revenue the sub-district communities decide what to do with the money in their respective localities. Whatever revenue disbursement rules they devise as a community will be respected by the RDC. In most RDCs, community decisions regarding use of income tend to be made at the ward as if it were the smallest producer community.

8. ***nested enterprises*** – appropriation, provision, monitoring, enforcement, conflict resolution, and governance activities should be organised in multiple layers of nested enterprises.

Many biological processes occur at small, medium and large-scales such that their effective management require that governance systems are organised in multiple scales that are effectively linked (Ostrom 1995). Exclusive emphasis on simple large-scale institutional arrangements destroys arrangements at the smaller scales, where local knowledge and concerns about natural capital can be applied on a daily basis. Thus the governance system must be as complex as the biological process it is trying to manage. It is not uncommon to find smaller scale organisations that are nested within larger ones, each with its own distinct set of rules. Wildlife ecosystems are not an exception since it is possible to delineate wildlife ecosystems into multiple scales relating to the territorial or habitat requirements of species. Including many semiautonomous local communities in the regulatory effort allows access and harvesting rules to be matched to local conditions than would a large-scale national organisation that seeks to apply uniform and detailed rules to the entire country which is characterised by immense diversity of local environmental conditions (rainfall, soil types, hydrology, temperature, elevation, scale of plant and animal ecology, etc) (Ostrom 1995). Some wildlife brings about nuisance and damage costs to the local communities. In fact wildlife has two other external effects: (i) the ecosystem effect is such that when you kill a leopard you may get, say, 20 impalas in the following year or when you kill an elephant the grasslands will turn into forests in the next period thereby significantly affect the ecosystem, and (ii) the stock effect is such that when you kill an animal there will be a lower density hence it could have a negative impact on reproduction or it could become difficult to hunt animals in the next period. The larger the nuisance effect and the smaller the ecosystem and stock effects the more you can give appropriate conservation rights to the local level. Also the inter-temporal benefits that local communities may obtain from sound management of the wildlife resource are potentially greater. Thus the romantic view that national problems should be solved nationally is no longer at the heart of sustainable resource management. Large-scale organisations alone are not the solution because if large scale units destroy viability of the small scale units, then organisational failure is likely to be on a much larger scale than organisational failure at a local level (Ostrom 1995). The CAMPFIRE initiative was propagated from the realisation that as long as natural resources, particularly wildlife, remained the property of the state through the DNPWLM then communal landholders would not invest in it as a resource thereby threatening its existence.

The similarly romantic view that anything small scale and local is to be preferred to anything organised at a national or larger level has also been refuted because local participants do not

uniformly expend the effort needed to organise and manage these resources, even when given formal authority (Ostrom 1995). Some potential small-scale organisations never form at all and where they have managed to form they suffer from elite capture by both traditional and democratically elected authorities, i.e. they are often dominated by the elite who divert resources to achieve their own goals at the expense of the community. Cases of corruption have been reported in several CAMPFIRE districts. Small-scale local organisations by themselves are rarely the effective form of regulation of resources ranging over very large scales. One argument against devolution is the large-scale and irreversible nature of wildlife ecologies. Devolution gives full ownership of wildlife to the local communities thereby implying the complete power to control the access and use of a resource, and have the capacity to hold the resource for private use or to alienate or destroy the resource (Schlager and Ostrom 1993). Success and failure at a local level are not monitored and no compensatory actions are taken to offset failure at the local level in a devolved resource. Other local organisations possess inadequate scientific knowledge about a resource to complement their own indigenous knowledge (Ostrom 1995). While traditionally commons have been managed successfully, the same cannot be automatic today because the communities that are being tasked with managing the wildlife resources have been divorced from their resources for almost a century and they have not been freely and effectively learning the ecological systems of these resources. For most communities no modern or traditional knowledge exists because of the long-term alienation from the resources. This calls for collaboration between modern organisations with easily and quickly available information about the functioning of ecosystems and the small-scale local appropriators of the resources. This explains why organisations such as the Africa Resources Trust, WWF, ZIMBABWE TRUST, etc have been involved in CAMPFIRE. More so, the nature of the dominant use of wildlife – trophy hunting – is such that capital-intensive management is required, which communities by themselves would not be able to sustain.

The solution to effective long-term sustainable wildlife resource management under CAMPFIRE is co-management or nested enterprises, where appropriation, provision, monitoring, enforcement, conflict resolution, and governance activities should be organised in multiple layers. Co-management accentuates the different vested interests of stakeholders rather than just communities or just the DNPWLM and thereby acknowledges the multiple jurisdictions that exist in the management of the wildlife resource (Hasler 1999). This recognises that while small-scale and large-scale organisations are not independently sufficient, they each constitute the necessary part of the hierarchical governance needed in wildlife resource management under CAMPFIRE. While there has been much involvement of medium to large-scale organisations the small-scale sub-districts local communities have largely been left out from active wildlife conservation under CAMPFIRE. There is a need to increase the contestation of sub-district local communities in wildlife conservation under CAMPFIRE. Involvement of communities naturally entails also taking refuge in the traditional systems of resource management. Diluting the modern local governance systems of resource management with traditional ones will not necessarily entail becoming primitive again. To go forward into the future that preserves high levels of resources, may require going back to traditional systems of resource management (Ostrom 1995). The layers that should be operational and nested according to Hasler (1999) are (i) village and ward, (ii) District, (iv) National, and (v) International.

Level	Stakeholders
International	Donor agencies, CITES, International Wildlife Lobby Groups
National	CAMPFIRE Service Providers[11], Politicians, Civil Servants, Technocrats, Private Sector
District	Local Government, RDC Officials, RDC Committees, Technocrats
Village & Ward	Village and Ward Wildlife Committees, Chiefs, Councillors, VIDCOs, WADCOs, Households

3. Conclusions and policy implications

Our investigation of the extent to which Ostrom's design principles are satisfied by CAMPFIRE shows that they are not wholly satisfied. Even though Ostrom (1990) does not say the satisfaction of these design principles is necessary we believe that their satisfaction can only help the institution to endure rather than harm it. Our investigation suggests that the direction of necessary reform of CAMPFIRE would be to encourage the formation of institutions that also honour the congruence between clearly defined resource and governance boundaries; congruence between appropriation and provision rules and local conditions; collective choice arrangements; and localised monitoring, increased local communities' contestations. Ostrom (1995) warns against the proliferation of blueprints. These principles can only be taught as part of extension programmes with the hope that communities themselves will set in motion mechanisms for adapting them. If adapting the missing design principles helps to culminate into a successful property rights regime in wildlife conservation then sustainability could be yielded in three dimensions: economic, social, and ecological (Hanna and Munasinghe 1995).

[11] This group of organisations that is responsible for co-ordinating the various inputs, including policy, training, institution building, scientific and sociological research, monitoring and international advocacy comprises of CAMPFIRE Association, DNPWLM, MLGRUD, ZIMBABWE TRUST, Africa Resource Trust, WWF, ACTION, CASS. Organizations that recently joined the group are The Department of Natural Resources, The Southern Alliance for Indigenous Resources, The Forestry Commision, The Agricultural Technical and Extension Services Department.

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APPENDIX

Table 1: Income from CAMPFIRE Activities (US$)

Year	**Sport Hunting**	**Tourism**	**PAC Hides & Ivory**	**Other**	**TOTAL**
1989	326 798	28	5 294	17 690	349 811
1990	453 424	2 865	42 847	57 297	556 433
1991	638 153	15 904	20 859	101 105	776 021
1992	1 154 082	18 951	9 429	34 216	1 216 678
1993	1 394 060	21 095	14 988	53 730	1 483 873
1994	1 553 543	39 985	2 770	46 373	1 642 671
1995	1 476 812	54 866	11 685	48 204	1 591 567
1996	1 656 338	23 275	39 869	36 429	1 755 912
1997	1 708 234	71 258	44 331	13 615	1 837 437
1998	1 787 977	40 871	25 205	37 713	1 891 766
TOTAL	**12 149 422**	**289 099**	**217 276**	**446 372**	**13 102 170**

Source: WWF SARPO, Harare

Notes:
1. Sport hunting - income earned from lease and trophy fees paid by safari operators
2. Tourism - income earned from the lease of wild areas for non-consumptive tourism
3. PAC Hides & Ivory - income from the sale of animal products primarily from problem animal control
4. Other - income from the sale of live animals, collection of ostrich eggs and crocodile eggs, etc
5. Mean annual exchange rate based on RBZ end of month exchange rates

Table 2: Allocation of Revenue from CAMPFIRE Activities by Year (US$)

Year	Disbursed to Communities	Wildlife Mgt.	Council Levy	Other	Not Detailed	TOTAL
1989	186 268	81 458	28 404	12 032	41 651	349 811
1990	206 308	121 485	52 530	22 501	153 609	556 433
1991	320 894	219 526	120 444	56 930	56 884	774 678
1992	601 385	207 291	115 398	17 837	274 767	1 216 678
1993	851 732	357 055	251 082	32 172	-10 432	1 481 609
1994	949 138	314 572	148 517	42 514	187 889	1 642 631
1995	946 777	353 772	193 080	26 214	71 723	1 591 565
1996	833 025	405 755	301 091	7 796	191 792	1 739 458
1997	858 357	29 661	26 746	12 415	915 884	1 843 063
1998	910 200	521 373	70 666	82 939	306 589	1 891 766
TOTAL	**6 664 084**	**2 611 947**	**1 307 957**	**313 349**	**2 190 355**	**13 087 692**

Source: WWF SARPO, Harare

Notes:
1. Disbursed to communities - revenue allocated to sub-district CAMPFIRE institutions
2. Wildlife Management - revenue allocated for wildlife and programme management
3. Council Levy - revenue allocated to district council general account
4. Other - revenue invested in capital development projects and RDC levy to CAMPFIRE Association
5. Amount Not Detailed - revenue not allocated but retained by RDC for general account
6. Mean annual exchange rate based on RBZ end of month exchange rates