

Informed change for Zimbabwe's communal areas: A Geoinformatics perspective

D.P. Goodwin,
Dept. of Geoinformatics and Surveying,
University of Zimbabwe,
P.O. Box MP167, Harare,
Zimbabwe.

e-mail: dpgoodwin@eng.uz.ac.zw
Telephone: +263-4-303211 ext. 1681

Abstract

The fact that resettlement land in Zimbabwe is held under indeterminate permit rather than title deed, means that it may be grouped together with traditional, Communal Area (CA) tenure. The net result is that the CA's in Zimbabwe are being added to by the day. Their future, however, is far from clear.

This paper reviews the land holding position in Zimbabwe's Communal Areas, both on a philosophical and also a more practical level, as these areas face pressures and incentives on a national and even a global scale. Conclusions include ideas on Community Zoning and also the integration of title reform initiatives with modern farming practices such as animal-impact grazing, conservation farming and water-harvesting. Also discussed, are changes that may be engendered by the giving of full, marketable title, including a change in the perception of land and boundaries. Finally conclusions are drawn concerning the need for improved CA land management (notably including the management of common land) as a result of access to spatial-data management tools at all levels from Village Assemblies right up to national level.

1. Introduction

The Department of Geoinformatics at the University of Zimbabwe has been involved for a number of years in the area of land rights in Communal Areas (CA's) and Resettlement Schemes in Zimbabwe. Among other projects, members of the Department were commissioned to carry out a research study for the Land Tenure Commission in 1994 on "Land Surveying, Registration and Record Keeping for Rural Land", and since that time a further study has been done in conjunction with Helsinki University in Finland. But even in the past two years the situation in the country has changed dramatically. Resettlement land has had an additional 10.5 million hectares added since the introduction of the "Fast track" approach (Zimbabwe Govt. Web site). In theory diagrams are cancelled for commercial farmland and it is returned to a type of family tenure reminiscent of the Communal Areas. Thus CA's are a growth industry today. But is this a good or a bad thing? And is the prevailing poverty at all likely to decrease? Communal land attracts accusations of erosion, poor crops and mismanagement, but

could these be improved and would the poor be even worse off if we did away with CA's altogether?

This paper attempts to look at the balance sheet in Zimbabwe's CA's in a holistic way; not just at boundaries but at land use practices as well, and also at people's beliefs and traditions.

2. A very old pattern of land holding

Our CA's embody the last vestiges of traditional tenure and culture. Cities in Africa have tended to model themselves on the West, but in the CA's – although the position is changing all the time, as we shall see – certain customary ideas are very ingrained. To illustrate this, we need look no further than two words for land in the Shona language, namely *minda* and *maprasi*. In the CA's *minda* are “fields”. Ownership is not implied by the word because the concept of ownership of customary fields is alien. Individualized farms, on the other hand, for example the small-scale commercial farming sector, are known by the word *maprasi*, which implies exclusive rights of ownership. But significantly, this is a borrowed word (from the Afrikaans *plaas*, a farm).

As well as family use-rights, in Zimbabwe's CA's there is genuine common land as well. It is as well to note at this point that many developed countries still have pockets of common land, for instance Switzerland and Denmark and even Port Meadow in the heart of Oxford in England. There is a sound historical basis for such land, for example it would not be practicable to divide up a reed bed so that each member of a community had a small square from which to take thatching reeds each year. It makes better sense to have *undivided* shares in a reed bed from which all members of a community have a right to take reeds. On the other hand, managing shared resources to curb greed and overuse becomes progressively more difficult as crowding increases. We will also see in section 7.2 that for modern practices like animal impact grazing, where timing is so critical, it is even more difficult to monitor and manage a shared resource in the fourth dimension.

3. Two strengths of Communal area tenure

3.1 Community

Central to the idea of common land is the concept of “community”. This is an area that tends to break down before the advance of “westernisation”. Strong communities are often displaced by societies where choosing a place to live and even a country of residence is undertaken with little more ceremony than choosing a supermarket commodity. For many the September 11th, Twin Towers disaster was a salutary reminder that, like it or not, we are all part of a global community. In Zimbabwe's CA's, far from being “open access” to common land, there are rights by virtue of belonging to a tightly-knit community all of whom recognize that their futures are interdependent. Land cannot be owned outright, rather it is held by the living in trust for those who have yet to be born. In essence this is not unlike what the Christian Bible advocated thousands of years ago:

Lev. 25:23

The land must not be sold permanently, because the land is mine and you are but aliens and tenants.

Especially in cities it is probably not practicable to apply such a precept rigorously today, but the spirit of it is still important and relevant today in that we cannot take possessions with us when we die, including immovables such as land.

Communal Area tenure also makes provision for the poor and homeless, again with Biblical precedent:

Lev. 25:35

If one of your countrymen becomes poor and is unable to support himself among you, help him as you would an alien or a temporary resident, so he can continue to live among you.

It is perhaps easier in unstable Zimbabwe today than in many other countries to remember that our futures are bound up with the futures of others. A country is a community, and sub-units within the country right down to family level are communities, and section 7.1 explores possibilities of making more of this fact.

3.2 The right to work

One important principle enshrined in customary tenure in Zimbabwe is that the right to work is implied. In theory, if anyone is unemployed there is an opportunity to work and to receive in return food and other benefits of work. A right to work is fundamentally different to a guarantee of social security for the unemployed (the dole) as we find in many developed countries.

Hitchcock writes:

Unemployment, in the modern capitalist state, is a penal sentence on the human spirit, and boredom, in the 21st century, will be a moral cancer of epidemic proportions.

We have argued that in the absence of a viable State social security system, Communal land, because it is the only security system, should not be saleable (Törhönen & Goodwin 1998). But perhaps one could even go further than this to say that even if viable State security existed Communal land would actually be *superior* to it in not only providing income but also providing the opportunity for work. New ways for creating full employment are being explored in the developed world, such as the four-day week in France, but in some societies a four-day week or else more people doing a job than are strictly necessary, are both perceived as inefficient. Even in high-unemployment situations governments tend to opt for high-mechanisation solutions. For example, to quote from Newsweek, January 21st, 2002, p 22-23:

In an era when advances in technology mean that far fewer people can produce abundant harvests, many argue that agribusiness may provide cheaper foodstuffs for the market while releasing rural labour for other pursuits. (Smith, 2002)

This argument may be valid if “other pursuits” are available, but if not, then even small harvests reaped at the expense of much labour are preferable to the desperation of no work and no income. To be without work is not just to put people in a position where we may see theft – even violent theft – as the only way to feed self and family, it is also to open the way to demoralisation and despair.

If alleviating poverty is agreed as a goal of development, then it is perhaps as well to stress the responsibility of a country to provide a means of livelihood for all its citizens rather than necessarily to provide land *per se*. In other words, perhaps we would do better to espouse the widely endorsed philosophy of meeting basic needs (including a right to work), rather than endorsing the popular rallying cry of "land for all".

4. The shocking alternative to communal land

In the previous section we have considered whether there is a case for the continued existence of Zimbabwe’s Communal Areas because they provide work and support for the otherwise unemployed. However current international opinion views the absence of marketable title in these areas as an anomaly. The following words from a development magazine are fairly typical:

Lack of titles threatens the poor with land grabbing, impedes investment and holds back the development of a land market which could allocate land to those who need it most. (Zimmermann 2002 p16)

Certainly the development of a land market “could” allocate land to those who need it most, but the question is WOULD it? Because regrettably investment is seldom benign for the poor, let alone advantageous. If land in Zimbabwe’s CA’s were to be made marketable, the most likely scenario would be that, beginning with a trickle of people selling land to raise capital this would soon become a flood, and many of these people would head for the cities unless smaller, rural population centres could be made far more attractive than they are at present. The same thing happened in the “enclosure movement” in England. Thus the almost inevitable alternative to land being held under traditional tenure is quite simply escalating urbanisation. Urbanisation on an almost unimaginable scale. The economist Robertson has estimated that the population of major Zimbabwean cities could be expected to treble in a few years if full, marketable title were given in Communal Areas.

Let us look at why this should be so, beginning with the Sunday Mail report, June 1999, which informs us that "over 80% of the 1200 indigenous commercial farmers throughout the country are facing foreclosures from the Agricultural Finance Corporation due to outstanding loans with some of the farms having already been auctioned at far below market prices." In that report we are seeing the deeply disturbing downside of offering marketable title. Foreclosure does not necessarily point towards irresponsible farmers, although it may do. Stories of borrowing money against land collateral for wedding feasts or even funerals are legion, but farmers may equally well come unstuck as a result of drought, theft, equipment failure and other factors. Whatever the reason, at the

date of the article the telling point is that over 80% of indigenous farmers with land were on the point of losing it or had already done so.

Returning once more to the case of Zimbabwe's Communal Areas, the main reason offered for giving marketable title in these areas is so that farmers who are not farmers by choice could, by sale of their land, raise money to set up businesses that require starting capital. In theory those in this category could sell their land, raise capital and then head for "the bright lights", thereby making land available for other would-be farmers. However, firstly, selling communal land parcels is unlikely ever to raise princely sums of money, and secondly, the truly entrepreneurial farmer probably left for the city years ago and in his absence his immediate or extended family are doubtless making good use of the land. For the farmers on the ground, history shows that in a transition phase between subsistence and commercial farming, giving marketable and even more significantly taxable and mortgageable title goes hand-in-hand with an appreciable risk of having to sell the land in order to raise cash to pay tax or repay loans. It is therefore perhaps fortunate that in our CA's today, with no mechanism for transferring ownership and rights in land, it is impossible to offer mortgages underwritten by land collateral. Loans are only possible by other means, for example using growing crops as collateral, or peer pressure collateral (e.g. the Masvingo Credit Against Poverty (M-CAP) scheme on the lines of the Grameen bank). However, although such lending does not carry the risk of losing land, loans are accordingly smaller.

In summary, then, when considering any reorganisation of rural land we need to keep in mind at all times that urbanisation is one of the most pressing problems in many developed countries today. In other words, difficulties are more often experienced internationally not with too many farmers and too little land but rather with too few farmers being prepared to work the available land. Even if we have not yet felt the full force of this movement in Zimbabwe, there is no reason to suppose that we will be exempt from chronic urbanisation in the future. With this in mind, the practice of taking land that is being used productively by experienced farmers and apportioning it to others who may or may not be prepared to stay in farming is almost certainly a retrograde step, and so too would be giving full title indiscriminately to all communal parcels.

5. Yet, something needs to be done

Arguing a case against indiscriminate, marketable title being offered in our CA's is not to say that they are utopian. Far from it. Something needs to be done about the CA's and especially about land that is common rather than having family use-rights.

One problem of CA's today is that while the original, customary system had inherent checks and balances, today the equation has altered. Firstly there are more people than was ever the case historically and fewer resources to go round, and this makes for more competition. Secondly, some components of the system have been removed or diluted e.g. the authority of chief or headman, and the loyalties and responsibilities of the original family structures have been eroded now that some members typically work in towns, because as well as being financially independent they have come to accept

different norms. One cannot, therefore, say “let us preserve CA tenure”, because CA tenure in its pure form no longer exists and without checks and balances the creature that remains might prove to be a monster.

And thirdly, as soon as a soft drinks stall is set up in the darkest jungle a cash economy becomes a prerequisite for all those who would sample its wares. “Coca-colonisation” it has been termed, meaning that the prevailing climate of globalisation has impinged upon customary systems through trade and commerce. Developed countries by and large emphasize individual rights, in some instances arguably at the expense of family and community rights, and this paradigm is influencing norms around the globe.

Having said this, on one level even the most developed countries still recognise the concept of community and family and nation. Why else would farming industries be protected by subsidised inputs, or protective trade agreements be set up? Lower Income Countries (LIC) are contesting this (e.g. Wahl, 2001) but at the moment it is a fact of globalisation. The hope of many lies in a point arriving whereby we can all see ourselves as part of a global community where fortunes of rich and poor are inextricably bound up together in a society that stresses the responsibilities of global citizenship as well as rights.

6. Changes in attitude towards communal land

In Zimbabwe we can witness a change in attitude towards buying and selling Communal Land. People are “voting with their feet”, in other words they are not just talking about it, they are doing it. And understandably so – it is unlikely that a person will buy a plot of land in town one moment and the next moment willingly relinquish use-rights to family land in the Communal Areas without expecting anything in return. Although land in CA’s is theoretically incapable of individual ownership, considerations in cash or kind are now paid in many instances for the right to possess land, and it has come to be expected that at least part of this outlay can be recouped if the use of land passes elsewhere. Called a “tribute to the Chief”, or the “purchasing of improvements”, it begins to look increasingly like a cash payment for land itself.

While needing further research, another change in attitude might occur towards both land and boundaries as soon as an orally described descriptive right is formalized, demarcated (if not done hitherto) and delineated on a diagram. An abiding memory for me personally is the time when our research team asked a family head if he could spare the time to show us the extent of the land being used by his family. But it seemed that such a trivial matter was beneath his notice, and he summoned a very young boy and asked him to take us around. This the boy did, pointing unhesitatingly to path intersection, grass strip between ploughed fields and so on. But one hypothesis is that once land is safely depicted on a bit of paper families will not bother to devote time to imprinting boundary positions on the young. This could perhaps be compared with the passing of oral traditions kept alive by the acute memories often characterizing the illiterate which may become blunted when stories are safely set down on paper. This area needs further investigation.

Another area needing study, is to investigate what the “spin-off” effects would be of offering title. How might having a bit of paper protected by law promote the empowerment of women, for example? A formal title is a right independent of tribal law, and a further thesis for investigation is that the introduction of formal land rights could be among the chief agents pushing a culture from tribal/communal to formal/individualized.

7. The way forward?

To summarise so far. Zimbabwe’s CA’s are an old form of land holding with certain strengths but also weaknesses especially in their modern, adulterated form. The idea of marketability of CA land is gaining ground, but introducing marketable title systematically across the board could have dangerous pitfalls as outlined in section 4. It would help no one to precipitate a flight to the cities and at a later stage have to attract people back to farming. Although there is a temptation to think that offering marketable title would induce sales that would free up land for the landless, one of the main reasons for selling might be that a farmer could not make a farm pay, but the reason for this might be not that the vendor was a reluctant farmer but rather because the land was disadvantaged by distance from markets and poor roads. The point is that if the farm was a goldmine then, even if the reluctant farmer did not sell the land but chose to pay someone else to rake the muck, if he was an entrepreneur worthy of the name he would somehow make it pay.

Is there anything else that we that we can do to improve land management in Zimbabwe’s CA’s? The following are some suggestions:

7.1. Community zoning

Many modern classrooms have integrated children with disabilities and mixed abilities rather than the traditional way of having “special classes” and streaming. The same phenomenon is evident in mixed density housing, where high, medium and low-density areas and even small industries are today sometimes built in fairly close proximity. The same principle can be argued for rural areas, namely to have zones within provinces where there is a mix of large, medium and small-scale farming. Immediate benefits that should accrue are that large-scale operations could be expected to carry the lion’s share of road maintenance, and could in some cases assist with heavy equipment (e.g. even in zero-tillage agriculture (see 7.2.1) sometimes deep ripping is necessary to beak up a plough pan). Already many commercial farmers recognize that, like it or not, they are living in a community that will succeed or fail as an entity. The fates of all members of the community are bound up together: for example, if some members are starving and others very affluent then there is likely to be a theft problem. With this in mind there is a tradition of large-scale farmers helping their CA neighbours out with machinery, transport for fertilizer and seed and extension advice about modern farming methods.

A mixed-density situation would be likely to arise naturally if one recommendation of the LTC was implemented, namely that of taxing unused or under-utilised land highly while permitting smaller areas of subdivision. In theory, large commercial farms would

see the necessity of carving off small areas of highly taxed (unproductive) land and putting them on the market. The economic forces of supply and demand would be likely to have the effect of lowering the price of these new parcels, initially at least, because many such properties could be expected to come onto the market at once (naturally there would need to be tax exemption for some sensitive areas on environmental grounds). But (also recommended by the LTC) such a move would also be more palatable if the lion's share of any land tax was kept within the "community zone" with only a small portion going to central government. If donor funding was secured then "soft loans" could be offered, at a low interest rate and repayable over, say, the best 15 out of 25 years to allow for drought and pests.

From a survey point of view, remote sensing offers a wealth of possibilities for classifying land, for example differentiating between land that is used acceptably, land that is unused but has agricultural potential, and land that is unused but has low potential.

7.2 A holistic approach to land tenure reform

Today a frequently stated aim of development is to make it holistic and community-centred. For example, (Sharma 2002) "A typical project may include several components under the following key areas of intervention: water resources development, socio-economic development, crop planning and agriculture, household energy, forestry issues and livestock and animal husbandry." If Land Tenure reform does no more than alter law, whether customary or codified, then changes will probably not be sustainable. We need to reform not just patterns of land holding but also such things as access to markets, infrastructure and especially agricultural extension that teaches modern farming methods. Knowledge is changing all the time, and the following three subsections summarize three important agricultural trends:

7.2.1 "Conservation farming", as we sometimes refer to minimum- or zero-tillage with mulching. The advantages of conservation farming are well documented today and include building up soil life, minimizing splash and sheet erosion, stabilizing moisture and making soils less vulnerable to dry or wet extremes, and so on. (Aldrieve 1993) "The message that no-tillage reduces input costs, benefits soil quality and reduces erosion and environmental pollution, is beginning to be embraced by farmers worldwide." (FAO, 2002) Conservation farming is inimical neither to "hi" or "lo-tech" farming. A farmer can make a hole through a protective mulch layer with anything from a badza (hoe) right up to a heavy-duty planter (some machinery can even apply a measure of fertilizer at the same time as planting seeds, a small distance away to prevent chemical burning).

7.2.2 "Animal-impact grazing." Essentially, this is using animals as a tool to break up hard earth capping to allow the penetration of seeds and water and break up oxidising grass tufts that are a bottleneck in the carbon cycle. Of special importance is the fact that when grass is grazed it "borrows" energy from the roots to give a "quick fix" re-foliation. However, at that point the plant's internal economy sets about re-growing the root system. If grazed again before the roots have re-grown this spells disaster for the plant. In natural systems what prevented this was the presence of predators, which caused animals to feed bunched together and moving about restlessly. Feeding like this, animals could

not be “choosey”. They had to eat everything, non-selectively, and they spread dung and urine about as they fed. Animals would be reluctant to return until their wastes had weathered away. In the absence of predators, however, animals tend to feed spread out, and their movement is placid rather than nervous so they don’t break up old tufts of grass (carbon remains locked up while grass oxidizes slowly). Animals feed selectively, a mouthful here and a mouthful there, and as soon as new growth appears they return to the same plants and nibble again, thus killing the plants. In the absence of predators, animals need to be concentrated by some other means, e.g. small paddocks or electric fences, and then prevented from returning until new growth is fully established. Timing may thus be seen to be critical, and also planning. (Savory 1992 & 1995)

7.2.3 “Water harvesting” includes contour ridging, water traps (pits to separate topsoil and water and assist the water to sink into the ground) and other means of encouraging water to remain on the land and raising the water table below it. Although wetland (*dambo*) cultivation used to be anathema some decades ago, a strong case can be made for the intelligent use of wetlands (e.g. Owen et. al, 1995) Dambo farming in Zimbabwe). In “The Water Harvester” also, we read how Zephaniah Phiri has done universally recognized work. In essence, while in no way condoning ploughing in *dambo* areas, Phiri makes a case for a careful use of wetlands with no more than hoe cultivation, and with certain safeguards in choice of crop, bananas and reeds to protect the soil, no chemicals etc. (Witoshynsky, 2000).

All of the above need planning, to a greater or lesser extent, all could be enhanced by access to spatial information, hence 7.3.

7.3 Appropriate and affordable spatial data management tools

There are instances when a case can be made for land to be surveyed without offering full, marketable title. Even without registered title, a diagram of land parcels and their relative locations may be useful to administrators and developers, especially if it is cross-referenced to a list of right-holders. A representation of reality at a smaller than life scale also permits planning from a distance. Furthermore, compensation for land expropriated in the national interest can in theory be more fairly and systematically disbursed.

From the point of view of the people on the ground, even without title a picture of land parcels drawn to scale can be useful for:

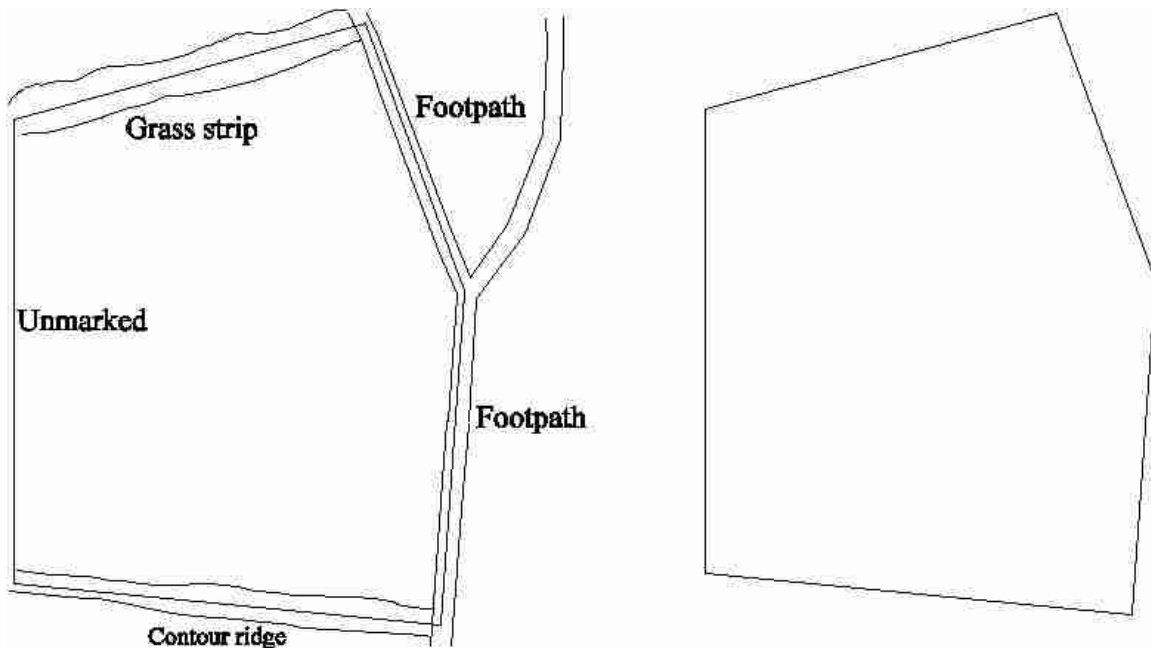
- Settling boundary disputes
- Planning boreholes and pipe and fence lengths
- Planning intercropping and crop rotations
- Working out areas for planning animal impact grazing and conservation farming both of which need diligent planning.

Turning to the details of such a surveying operation, at present physical boundaries such as paths or grass strips are generally accepted by abutting owners as indicating the boundaries to land. On the one hand, if such features are accepted by right-holders then they should continue to be the boundaries in fact. On the other hand, being irregular a

topographical survey of such boundary features will produce a large and cumbersome data set. One alternative that has been suggested is at the time of adjudication to achieve the consensus of abutting right holders to SIMPLIFIED BOUNDARIES, and merely to survey turning points in these.(Törhönen & Goodwin 1998). Such boundaries are perfectly adequate for administrative and other purposes and even for relocation in the event of doubt or dispute, and as far as right holders on the ground are concerned there is no need to change their idea of what a boundary is. It is significant that the boundary is simplified in the *field* and not from a photograph or satellite image back in the office. The boundary is approved by interested parties and after an appeal period it may become legally binding. Furthermore, a small data file results rather than the large data set typically resulting from a topographical plan, and if topography is ever called for the small file is easily overlaid at any scale on any map or rectified image.

Topographical plan of boundaries
(not recommended)

“Simplified boundaries”
(useful for a variety of purposes)



Underlying principles include:

- “one visit per parcel”, in other words performing an adjudication at the same time as carrying out the survey. Much of the time and cost factor is in getting to the site and convening meetings with abutting right holders (needed for the process of adjudication). With the exception of the data management dimension, survey has today become a simple matter of capturing a coordinate to better than a metre with, for example, third party corrected GPS (e.g. the Trimble ProXRS system). Managing the resulting data on a national scale is still a task for a specialist, and building in quality-assurance checks and designing a data dictionary for use by minimally-trained surveyors (Törhönen & Goodwin 1998).
- “simplification” of boundaries in the field not in the office.

- A period of appeal and public display (probably with simplified boundaries superimposed on “rubber-sheeted” satellite imagery or aerial photography after which the surveyed position may be adopted.

7.4 Entry points to individualized, marketable land

Associated with CA land are certain features that in the past may well have fostered egalitarian societies and provided checks against monopolies but which may be incompatible with a modern market economy. An example is the principle of “knocking down” if any member of society threatens to rise above the others. (Goodwin and Matambanadzo 1997). If pockets of CA dwellers have, for whatever reason, come to the realisation that the customary system of land rights governing them has outlived its usefulness, then it would be counter productive not to permit such evolution. For example, if a village agreed by say a 95% majority vote to sell off some common land for a platinum mine or a crocodile farm that offered attractive employment possibilities for the entire village. All we have argued against in this paper is the wholesale imposition of individualised, marketable title across the board. For cases where evolution is perceived as a good thing, a positive sign is needed that land has moved from one dispensation to another. Examples might include:

- a formal vote by a village with, say, an 80% majority in favour of embracing a new system of tenure
- a loan element built in to resettlement land so that settlers have to pay back something for the land. This land would automatically be linked to the cash economy by virtue of the loan component, and it ought to stand a better chance of working than “converted” traditional land since no traditional structures exist.
- The same arguments apply to small subdivisions shaved off commercial land (see Section 7.1) that are provided with loan and grant subsidies.

8. Conclusions

Despite a global trend towards the individually owned and the marketable, there is a good case for perpetuating family and community use rights in Zimbabwe’s Communal Areas because it is likely that an exercise to register all communal land for title would result in massive urbanisation and an even greater disparity between rich and poor than there is at present. However, even if marketable title is not offered in CA’s their position may be improved, as follows:

- As recommended by the Land Tenure Commission, minimum areas of subdivision should be lowered, under-utilised land (if not environmentally sensitive) should be taxed highly, and everything done to induce the carving off of small pieces of land from commercial farms. Soft loans should be offered, and the bulk of repayments should be kept at local level and used for developing infrastructure etc.
- In addition, thought should be given to rural zoning that creates “communities” comprising large, medium and small-scale land parcels with a shared responsibility for road upkeep etc.

- Modern agricultural methods such as conservation farming, animal impact grazing and water harvesting need to be taught and even enforced in communal areas.
- A spatial data management package should be made available for villages to purchase to support improved land management, perhaps paid for by some combination of a loan and grant.
- For CA land or resettlement land where strong motivation exists to commercialise it and where the implications are fully understood, an avenue should be created for land to move from one dispensation (customary tenure) to another (commercial).
- At the same time, further study needs to be done on changes in attitudes likely to be precipitated by altering boundary forms and by capturing an oral right on paper in words and pictures.

References

Aldrieve, Brian (1993) **Conservation Farming** Rio Tinto Foundation, Zimbabwe.

Chunga, F.T., Davies, J., Goodwin, D.P. (Team Leader) and Matambanadzo, P. **Land Surveying, Registration and Record Keeping for Rural Land**. Research Study 3, Zimbabwe Land Tenure Commission. September 1994. (71 pages).

FAO (2002) **No Tillage to Prevent Soil Degradation**. D+C Magazine 1/02

Goodwin, D.P. and Matambanadzo, P (1997) **Linkages between title information and other land related information in Zimbabwe**. Conference proceedings Helsinki International Seminar on Land Management.

Hitchcock, Dr. A.G. (2001) **Work as Worship**, (unpublished) University of Zimbabwe.

Owen, R et al. (eds) (1995) **Dambo Farming in Zimbabwe**. University of Zimbabwe Publications.

Savory, A (1992) **Holistic Resource Management**

Savory, A (1995) **Creating a Sustainable Civilization**, Video lecture to University of Albuquerque, New Mexico.

Sharma, S (2002) **Reinventing Watersheds**, Development and Cooperation Magazine, D+C 1/02, DSE

Smith, Prof. Tony (2001) **Beyond Land Rights** Newsweek Jan. 21st. 2002 pp22,23 (Smith is the Cornelia M Jackson Professor of Political Science at Tufts University).

Törhönen, M. & Goodwin, D.P (1998) **Would a Registry Map hang comfortably in a round, mud hut? A register of title for Zimbabwe's communal areas: Philosophical and Technical Considerations.** Australian Surveyor Vol 43 No 2.

Wahl, Peter (2001) Making Globalisation Work for all People. Development and Cooperation, 5/2001, DSE

Witoshynsky, Mary (2000) **The Water Harvester**, Weaver Press, Harare, Zimbabwe.

Zimbabwe Government Web site, Latest on Gazetted Farms.doc

Zimmerman, W (2002) **Fair Access to Land and Security of Land Rights: An Updated Strategy on Land Reform** Development and Cooperation, D+C No 2/2002