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Institutional Responsibility for Social Forestry in Africa: Lessons from Zimbabwe

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ABSTRACT

Social forestry has failed in may countries in Africa because the projects have been conceived, designed and implemented by agencies with a commercial forestry orientation. Social forestry must address the needs of farmers and be incorporated in the peasant farm system, using and expanding the existing institutions which service rural development. The lack of appropriate technologies is a major constraint to the success of social forestry. Foresters should play a major role in developing appropriate species and technologies and in the management of indigenous woodlands. Existing agricultural extension agencies are better placed to implement social forestry programmes. An integrated approach to development and land use is essential to maximise growth and ensure the sustainable utilisation of natural resources. Agriculturalists should consider trees, and other indigenous flora and fauna, essential components of the farming systems they are developing.

Introduction

It has become widely accepted by national governments and development agencies that the rapid deforestation of Africa must be reversed. The various disciplines will place emphasis on different aspects of the problem and will therefore implement programmes with specific objectives in mind. If the objective is to obtain the fastest possible tree cover within the immediate future, then establishing eucalyptus or other developed fast-growing exotic species may be the solution. In a sector policy paper on forestry in 1978 the World Bank advocated Australian eucalyptus plantations as a solution to the critical shortage of fuelwood. This solution was put forward on the basis that the eucalyptus grows faster than other known species. It makes no reference to the poor wood-burning properties of eucalyptus and no attempt is made to determine whether, in fact, the rural people consider firewood the most critical issue arising from deforestation.

It is now becoming increasingly obvious that many rural populations consider the time and resources invested in fuels plantations uneconomic. Whilst fuelwood is a constraint, they have other priorities which mean that a multi-use approach to tree-planting and rural

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afforestation would be considered more appropriate. The objectives of rural afforestation include wanting to save indigenous trees, increasing the tree cover for precipitation, reducing social erosion, improving soils and, most commonly, providing food, construction materials and energy on either a subsistence or commercial basis. Almost all research and training emphasises commercial timber production in both the developed and developing countries in the temperate zones and the tropics. The other objectives are, however, equally and in some situations, more important.

If rural afforestation objectives could be economically achieved by establishing large commercial timber plantations, conventionally-trained foresters would be well-placed to plan and implement the programmes. Where the programmes involve incorporating trees into rural communities, who are expected to plant, grow and harvest the trees on either an individual or community basis, it is essential that the objectives and priorities of these individuals and communities be incorporated when devising technologies for, and establishing, afforestation programmes.

In this paper we use the term 'social' forestry to include all tree planting which takes place by individuals or local communities in the rural areas. It is based on the definition (Shepherd,1985a:8):

"Farm, village or community-level forestry, by or for small farmers or the landless".

For much of Africa this refers specifically to all tree-planting activities in communally-owned lands. Some of the problems faced by a social forestry programme have been addressed by Shepherd (1985b) who emphasises the constraints faced by farmers, the problems associated with common property resources and the conflicts foresters face in trying to reconcile state and farmer objectives. An excellent annotated bibliography on the problems arising from various tenurial systems for trees is given by Fortmann and Ridell (1985). These and other issues have also been addressed by Casey and Muir in earlier papers (1986 and 1987).

If we accept that social forestry is by and for the people in rural communities then, by definition, the following steps are (or should be) involved in the establishment of social forestry programmes:

- identifying needs (eg social improvement, fodder, fuel, etc)
- ranking these needs
- identifying constraints
- developing technologies to meet the needs and overcome the constraints
- communicating the research results to rural households
- ensuring adequate access to the necessary inputs.

It is possible to incorporate specialists to carry out all these functions within a State Forestry Agency. But the agency will have been designed primarily to produce commercial timber on state land and/or to service privately-owned timber plantations. In order to mount a social forestry programme, a complete reorientation, and the employment of agriculturalists and social scientists to complement the foresters, would be required in most national forestry bodies. This paper hypothesises that it would be very much less expensive and more appropriate (both financially and in the use of skilled manpower) if social forestry were to be considered part of the farm system and incorporated into existing organisations servicing peasant farmers.

Social forestry, particularly in Africa, does not have a high success rate, and possibly one of the major reasons for this is that the institutional focal point of social forestry has been wrongly placed. The majority of social forestry projects have been implemented by the state forestry organisation which has had very little, if any, experience in working with rural communities. Also, such organisations, because of their commercial orientation, have an extremely narrow technical base which is inappropriate for social forestry which calls for a broad range of technical packages. Equally, agriculturalists have failed to implement forestry components of rural development projects and, in some cases, trees have been regarded as an alien feature of the farming landscape.

It is within this institutional environment that social forestry projects have been implemented and virtually strangled from the beginning. The most important target group in social forestry in Africa is the farmer, and the question that must be raised is who, institutionally, is responsible for social forestry?

Lessons from the pilot phase of the Zimbabwe Rural Afforestation Project

The Zimbabwe Rural Afforestation Project, supported by the World Bank, commenced operation in June, 1983, and recently completed the four year pilot phase. The Project, which has been managed by foresters, was designed and has been implemented in much the same way as many other social forestry projects in Africa. In the design stage, central planners and forestry officers identified deforested districts and equated these with severe fuelwood supplies and pole shortages. Initial planning, therefore, was largely a 'head office' exercise with little or no input and participation from the farmers or villagers. It did include Zimbabwe nationals but they had little, if any, more contact with villagers, or experience of their problems, than the funding agency.

The project incorporated a number of components:

- the establishment of nurseries for seedling production
- the establishment of demonstration and trial woodlots
- support funds to encourage woodlots in communal areas
- the establishment of block plantations in urban and rural areas.

During implementation the project concentrated resources into creating nurseries, establishing 62 nurseries in four years when the target for the project was 48. Within the context of its objectives the nursery component has been successful. It had a technical base of three species of eucalyptus and produced almost 8 million seedlings and distributed 4,5 million over the four years, despite two seasons of low rainfall. Production costs were, however, very high at a direct cost of ten cents per seedling. If overhead costs are included, the seedling production cost is approximately 25 cents per seedling. The project sells seedlings in the rural areas for three cents each, although in 1985/86 one third of the seedlings were distributed free of charge. Seedling mortality after the first season is in the region of 20-25%. Mortality over a longer period could be far worse.

The demonstration and trial woodlots have not been as successful as the nursery establishment. The objective was to have 5 hectare plots adjacent to all nurseries. In practice, it has been difficult to obtain such large pieces of land adjacent to nurseries and some

demonstration plots are several kilometres away, reducing their value. The objective was to be able to demonstrate the rotational aspect of forestry management by planting one hectare per year. Farmers, however, are not in a position to manage their woodlots in conformity with conventional forestry practice and 0,1 hectare woodlots adjacent to nurseries would be adequate. These woodlots, as established by the Project, could, however, be a valuable research tool giving information on eucalyptus survival, growth and production under different agroecological conditions. To date, little coordination between the project and the research division has been achieved. The project anticipated growth rates of 8-10 MAI but it appears that the growth rates are, in fact, 5-6 cubic metres per year or even lower.

The project anticipated that average farm woodlots would be approximately 750 trees. In practice, however, it appears that most farmers think of planting 10 to 50 trees (du Toit *et al*). The project has not been able to determine the number of woodlots established by farmers, but preliminary survey work indicates that survival and growth rates are similar to those on the demonstration woodlots. A major shortfall of the project was that it did not take cognisance of plantations, woodlots and nurseries owned and operated by other government ministries and local authorities. The local councils own considerable numbers of woodlots, nurseries and areas of indigenous woodland.

The project has established 8 urban plantations (totalling 408 hectares) and 6 rural plantations (220 hectares) from a target of 5 urban (350 hectares) and 4 communal (1050 hectares). A survey of the Gweru block plantation programme shows that establishment costs are over $1 000 per hectare. Sales of the wood are estimated to return only two-thirds of the direct cost incurred in the establishment, maintenance and harvesting of the wood over a four year period (this assumes that 50% of the wood is sold as poles and 50% as firewood). It was further estimated that to meet one quarter of the demand for fuelwood in Gweru over 2 million dollars would be required to establish the plantations. Current fuelwood needs are met through the destruction of indigenous woodlands (3 000-4 000 hectares per annum to supply Gweru with fuelwood). There is increasing support for the proposal to reduce urban reliance on woodfuel by meeting urban fuel needs with electricity, and therefore reducing the emphasis on urban fuel needs in forestry projects.

The block eucalyptus plantations have been unable to produce cost-effective supplies of fuelwood, and it is possible that support for directing the offtake of indigenous woodland, and helping to manage this resource, may be more productive in supplying fuel needs where some natural vegetation still exists. This is particularly important for those areas where indigenous fuel still supplies households. In much of Africa, considerable conservation of indigenous woodland would occur if more emphasis in research and extension was placed on managing existing vegetation.

Whilst the Rural Afforestation Project in Zimbabwe has achieved, and in fact exceeded, some of its targets, it has not addressed the major problems the society is facing as a result of continued deforestation. It is obvious that the planting of several hundred hectares of eucalyptus woodlots will not avoid the crisis of deforestation. Most of the woodlots being established in the communal areas will be harvested for poles, which, although essential to building, are in limited demand in these areas. The project has, therefore, still to address the

fuelwood crisis both in the urban and rural areas; meet farmers' other needs (eg fruit and fodder), and tackle the broader environmental issues such as soil conservation and soil improvement.

If the socioeconomic aspects of the problem had been carefully considered before it was implemented, the project would be in a better position to address the real needs of the society, both urban and rural. If the project had taken a more investigative approach, it would have been discovered that there was, in fact, a rural nursery network made up of individual, council, school and government nurseries (eg Ministry of Youth). If the project had adopted a policy of supporting and developing the already established nurseries, rather than creating its own bureaucratic and heavily subsidised nursery component, there would have been considerable savings and a greater impact on both deforestation and reforestation. The new phase acknowledges this and the Project now bases its nurseries at schools and has taken a much more progressive approach to developing rural forestry.

The Baseline Survey (du Toit *et al*) did not establish farmer priorities for tree planting, but it did indicate that many farmers had planted fruit trees whereas only 11% had planted eucalyptus. Further, the farmers did not perceive firewood as a major benefit from tree planting. Construction materials and fruit were accorded higher priorities. Although sources of construction wood are over 10 km from some farmers, only 6% ever purchased poles for construction. Fruit trees and fodder trees often produce valuable amounts of fuelwood and therefore, if the project had focused on these two issues, it would probably have been more effective in rural fuelwood production than the conventional eucalyptus-fuelwood project. Furthermore, many fodder trees are nitrogen-fixing with better mulching properties, and because they would be grown on the cultivated areas they would play a more effective role than the eucalyptus in soil improvement and conservation.

The Zimbabwe Forestry Commission have recognised this and have accepted that they need to find more appropriate trees and technologies in order to play an effective role in rural afforestation. This paper, however, suggests that much of the responsibility for implementing social forestry programmes should be placed with Ministries of Agriculture which need to incorporate tree-planting in a more holistic approach to farming.

The holistic approach

The focal point of social forestry development should be in agriculture, and trees should be an integral feature of agricultural research, extension and training. Not only do the crop and livestock components need to have a strong linkage, but trees must be viewed as an integral feature of the farming model. There is a danger that trees will be incorporated into the agricultural extension organisation but will remain isolated from the farm system unless a holistic and integrated approach is adopted.

Trees form a vital component of grazing areas especially in dry regions. In recent discussions on development issues, farmers indicated they were keen to establish their own tree nurseries to grow browse and fodder species to plant in the gazing areas to enrich the existing tree cover. This development should only be the first step. Research should

investigate the possibilities of improving indigenous browse and fodder species, the management of trees in grazing areas, and the introduction of exotic species to further improve the quantity and quality of browse and fodder. A useful benefit of managing trees for livestock could be the production of relatively large amounts of fuelwood.

Appropriate technologies and commodities must be developed for the drier zones. Extension can play its part by adopting an holistic and diagnostic approach when dealing with the farmers and their problems in these areas. This would mean extension workers understanding and analysing the local farming systems, and permitting farmers to actively participate in the planning and decision making process. Extension workers would therefore pass on advice where appropriate, but, more importantly, would be attempting to learn more about local conditions, problems, needs and potential, and report back to research institutions. The local people are in a position to help identify useful trees and plants, which could then be selected by biological scientists and forestry specialists for further research and development.

The agricultural extension service in Zimbabwe is currently undergoing some radical changes both in its approach to extension and in its requests to the researchers for more appropriate technologies for the arid zones. It is essential, therefore, for social forestry to be incorporated in this new thrust. Without adequate input from foresters, the service will be less inclined to incorporate trees in their programme, since their training makes them more familiar with annual crops and animals.

Fundamental to all these new developments is the need for agricultural colleges to supply high calibre agriculturalists with an integrated and not a compartmentalised view of agricultural development.

Some new directions for social forestry research, extension and training

Research

Social forestry projects, because of their narrow focus, have rarely acknowledged the many uses and roles of trees, and have refused to accept that farmers may be more willing to plant fodder or fruit trees than eucalyptus. This forester preoccupation with eucalyptus and the lack of understanding of trees within systems has created one of the major constraints to the development of social forestry - the severe lack of appropriate tree technology which is available to the farmer.

A substantial increase in tree technology, therefore, needs to be developed on the sound basis of what the farmer's needs are, and as an integral feature of the farming system. Such research needs to consider indigenous trees and their potential for development (Muir, 1989).

Until recently social forestry research did not have a natural niche in any institution, but the advent and development of farming systems research offers an ideal location. Any farming systems research (FSR) programme would be seriously deficient if it did not include trees in its work. A farming systems research team consists of a multi-disciplinary group of scientists who carry out diagnostic survey work prior to a programme of on-farm experimentation and testing. A farming systems unit aims at strengthening and complementing the work of other technical scientists by analysing the country's many farming systems in their

totality and pinpointing key points for technical intervention (Collinson, 1986). To date few of these units incorporate foresters nor have they developed links with forestry research agencies.

The farming systems research approach enables farmers to be part of the process of technology choice and development and for farmer's needs and problems to set the agenda for specialised disciplinary and commodity research. The approach generates bottom up information for policy makers and planners to enable the efficient and effective mobilisation of technologies in local communities.

The planting of trees on farms is not fundamentally a forestry issue, it is a farm system and social issue. A research and extension approach which treats trees as one of many potentially productive activities that must be incorporated into the farming system. should be developed. The natural home of social forestry research is within the developing and vitally important field of farming systems research.

At the same time, forestry organisations play an essential role by providing appropriate technologies and commodities. It is their function to carry out species screening trials, seed collection and provision, propagation methods, etc. Further on-farm trials, demonstrations and development of promising species returns the emphasis to the agricultural research and extension organisations.

For forestry organisations (through rural afforestation projects) to become directly involved in 'agroforestry' work is a waste of valuable resources. The multi-disciplinary teams of agronomists, sociologists, economists, livestock specialists, etc necessary for this type of work are to be found in most farming systems research units. What is required now is the inclusion of one or two forestry specialists within the FSR team.

In the past, forestry research organisations have invariably focused on the commercial aspects of forestry. These organisations need to broaden their activities by providing technical services to farming systems research teams and by investigating such issues as the management and regeneration of indigenous woodland.

Extension

The acceptance of trees as a crop and an integral feature of the farming system leads to the natural development of forestry extension within the agricultural extension service. Agricultural extension workers should not view the inclusion of trees in their work programmes as an extra burden but recognise that their message is incomplete without a tree component. Even though there is limited tree technology available, forestry extension should be integrated and developed within the agricultural extension system for two reasons.

Firstly, the technology that is available, which is largely based on a few species of eucalyptus, requires a system for this information to be transmitted to the farmer. The establishment of a separate forestry extension service is not justified financially.

The second reason for the immediate development of forestry extension within the agricultural service is to create a system which can generate valuable information at the grass roots level and feed it back to the planners, policy makers and researchers. For the field extension worker this would mean developing a diagnostic approach, which, in operation would be two pronged.

One aspect of the diagnostic approach is to observe what farmers are actually doing with respect to trees. For example, many farmers in Zimbabwe modify the recommended spacing for eucalyptus and intercrop their trees with annual crops. Farmers in some areas of the country are planting jacarandas for fuelwood and timber. They have discovered that this tree is easy to grow, termite resistant, grows fast, and coppices and pollards well. These developments need to be picked up by the extension service and fed through to researchers and planners.

The other aspect of the diagnostic approach is not so passive and will involve meetings and discussions with individual farmers and groups to provide feedback on farmer attitudes and needs with respect to trees. In Zimbabwe, recent farmer-groups meetings for example have revealed that fruit trees, fodder and browse species are needed. Agritex (the agricultural extension service in Zimbabwe) have also taken some major steps in introducing agroforestry into their programmes, but are frustrated by lack of information and appropriate technology.

Training

The integration and development of forestry within the agricultural bureaucracy should focus on two key issues. These are the training of agricultural staff in basic tree knowledge and issues, and the introduction of forestry subject matter specialists within the organisations.

Agricultural staff in post, especially field workers, will need to undergo in-service training. For this purpose, short courses should be offered covering such topics as current technology (eg eucalyptus), indigenous woodland management, fruit and fodder trees, and the role of trees in the protection, improvement and conservation of the soil. The Forestry service will play an important role in such training.

To meet the longer term objectives of forestry training for agriculturalists, agricultural courses, at all levels, will require a forestry component within their curricula. Therefore, parallel to the inservice training programme should be the development of suitable forestry courses at agricultural institutions. This, in turn, will necessitate the posting of a forestry lecturer at each agricultural college.

Forestry subject matter specialists will need to be deployed at key levels within the agricultural extension organisation. The crops production branch would possibly be the niche for these specialists, with some senior officers at the national headquarters and a forester in each of the provincial or regional stations. More foresters may be needed at the field level (district) depending upon the work programmes and local problems.

Most foresters have undergone a commercial forestry training and therefore have little understanding of the dynamics of rural communities. Foresters who are destined to become specialists within the agricultural extension organisation, will need to be suitably trained in the disciplines of agriculture, rural sociology, economics, farming systems, land management, soil conservation and extension methodology.

Forestry colleges, because of their commercial forestry orientation, cannot provide this training, nor does it make sense for the colleges to become centres of social forestry training. The requisite disciplines are found in most agricultural colleges and therefore the focal point of social forestry training for both the agriculturalist and forester (agroforester) should be the agricultural college.

Nevertheless, forestry colleges need to broaden their curricula to include such issues as the management of indigenous woodland for local communities, the development of rural woodbased industries and the management of fuelwood plantations.

If it is not possible to base social forestry within the agricultural sector, it may be a more practical step for projects within Forestry agencies to recruit agriculturalists with peasant farm experience. They are better equipped to carry out farmer-extension activities and have a deeper understanding of the rural situation than foresters.

Conclusion

Ideally, rural afforestation projects should include multi-disciplinary teams (agriculturalists, economists, foresters, anthropologists, etc) which research and investigate the major issues of social forestry and draft proposals for further development. This is not the case. Invariably, such projects are implemented by state commercial forestry organisations. It should now be clear to foresters that a major objective for social forestry programmes is to work with the agricultural sector, to discuss and work out the details of developing and integrating 'trees' within agriculture. This may seem a difficult task because, as noted earlier, agriculturalists have, in the past, often regarded trees as something alien which must be eradicated from the landscape.

The problems of a non-integrated view of agricultural development and inappropriate extension approaches are being recognised by agriculturalists and attitudes to trees are changing. The establishment, in a number of African countries, of farming systems research which takes a more holistic view and also attempts to bridge the all important research-extension link, is indicative of new agricultural thought. Similarly, extension agencies are developing a diagnostic approach for their extension workers in the field. Riddell (1982) argues that the future of Africa's forest resources is tied to agricultural production.

Thus, agricultural organisations are undergoing some important evaluations and fundamental changes. Agriculturalists, foresters and wildlife agencies should seize this opportunity to include trees and other indigenous flora and fauna in this process of change (Muir,1989). The time is therefore ripe for a major step forward in the development of social forestry, agriculture and wildlife utilisation in an integrated approach to land use systems.

Integrating forestry into the national agricultural extension network relieves the forestry organisation of establishing a parallel extension system. At the same time, forestry organisations need to broaden their programmes to include the management of indigenous woodland for local communities and assisting councils to develop commercial forestry activities. This calls for a few forestry specialists for each province or region, but not a social forestry bureaucracy. The provision of seedlings, pots, seed, etc in the rural ares could be achieved through existing agricultural supply centres, rural shopkeepers and the school, council and private nurseries that may already exist.

Thus, costly nursery components set up by rural afforestation projects are not necessary. Nurseries already established could be transformed into 'tree centres' which produce specialist trees such as fruit trees, and centres which provide seed, pots, etc and instruction in

nursery practice. These centres need not be run by the forestry organisations but could be handed over to local nurserymen to own and manage.

For social forestry to have any meaningful development, trees must be fully integrated into agriculture. Agriculturalists must accept that trees should feature prominently in extension, research and training programmes. Equally, forestry organisations, while retaining their commercial emphasis, should broaden their activities and provide important technical research for social forestry.

Existing organisations and networks should be utilised to develop social forestry. Relatively lower budgets are required if programmes are directed to expanding the existing institutions so that they are adequately able to fulfil the objectives of rural afforestation. These proposals, especially in times of scarce resources, should be welcome.

This paper proposes that investment in social forestry should be made so that:

- existing infrastructure and institutions are used for nurseries and demonstration units wherever possible;
- farming systems research units expand their research to include trees and other indigenous flora and fauna;
- tree breeding and production research within conventional forestry agencies be expanded to include research and development of indigenous trees and of exotic species which will fulfil a broad range of farmers objectives;
- social forestry programmes are implemented by existing agricultural extension agencies.

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