INSTITUTIONAL RESPONSIBILITY FOR SOCIAL FORESTRY IN ZIMBABWE

John Casey and Kay Muir *

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Department of Agricultural Economics and Extension
University of Zimbabwe
P.O. Box MP 167
Harare

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* John Casey is a former officer with the Zimbabwe Rural Afforestation Project.
Kay Muir is a lecturer at the University of Zimbabwe

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 fuelwood plantations uneconomic. Whilst fuelwood is a constraint, they have other priorities which means that a multiple-use approach to tree-planting and rural afforestation would be considered more appropriate. The objectives of rural afforestation include wanting to save indigenous trees, increasing the tree cover for precipitation, reducing soil 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 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 ODI Social Forestry Network definition:

> "Farm, Village or Community-Level Forestry, by or for Small Farmers or the Landless" (p.8 Shepherd, 1985a)

In Zimbabwe, this refers specifically to all tree-planting activities in the communal lands. Although we will be concentrating on peasant farmers, schools and local authorities should not be forgotten. 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. These and other issues have also been addressed by Casey and Muir in earlier papers (Casey and Muir, 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 (e.g. soil 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 the Forestry Commission. But the Commission is primarily designed to produce commercial timber on state land and to service the privately-owned timber plantations. To be able to mount a social forestry programme, a complete reorientation and the employment of agriculturalists and social scientists to complement the foresters, would be required.

This paper hypothesises that it would be very much less expensive (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 service organisations.

The suggestion, therefore is that investment in social forestry should rather be made so that:

a) the farming systems research unit in the Ministry of Lands, Agriculture and Rural Resettlement expands its diagnostic research to include trees;

b) the tree breeding and production research in the Forestry Commission is expanded. This will ensure that they are able to concentrate on research and development of indigenous and exotic species which are more likely to fulfil a broader range of farmers objectives and which will be environmentally suited to the conditions;

c) social forestry is included in the agricultural extension system. This will require that several foresters are attached to Agritex together with the training of agricultural staff so that they can include extension on tree production and management and report-back to the research teams on farmer objectives and constraints;

d) initially a subsidised programme of nurseries and demonstration units may be required but where possible existing infrastructure and institutions should be supported rather than establishing a completely new network for input supplies.

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 implementd by the state forestry organization 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, where social forestry 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 RURAL AFFORESTATION PROJECT

The project commenced operation in June, 1983, and has recently completed the first four years, the 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 on the African continent. 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.

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 the 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. The nursery programme had a technical base of three species of eucalyptus. Within the context of its objectives, the nursery component has been successful. It produced almost 8 million seedlings and distributed 4.5 million over the four years, despite two seasons of low rainfall. Production costs are, however, very high, at a direct cost of 10 cents per seedling. If overhead costs are included, the seedling production cost is more than doubled to approximately 25 cents per seedling. The project sells seedlings in the rural areas for 3 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 ha 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 1 ha per year. Farmers, however, are not in a position to manage their woodlots in conformity with conventional forestry practice and 0.1 ha woodlots adjacent to nurseries would be adequate. These woodlots could, however, be a valuable research tool giving information on eucalyptus survival, growth and production under different agro-ecological conditions. To date, little co-ordination 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 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 operted 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 (total 408 ha) and 6 rural plantations (220 ha).* A survey of the Gweru block plantation programme shows that establishment costs are over $1,000 per ha. Sales of the wood are estimated to return only two-thirds of the 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 estalish the plantations. Current fuelwood needs are met through the destruction of indigenous woodlands (3,000-4,000 ha per annum to supply Gweru with fuelwood).

Whilst the Rural Afforestation Project in Zimbabwe has been relatively well managed and 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 have a limited demand in these areas. The project has still to address the fuelwood crisis both in the urban and rural areas; to meet farmers' other needs such as for fruit

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* the target was 4 communal, total 1,050 ha and five urban, total 350 ha = 1,400 ha block plantation.

and fodder and to tackle the broader environmental issues such as soil conservation and soil improvement.

It would appear from a study of the Rural Afforestation Project that if the socio-economic aspects of the problem had been carefully considered before it was implemented, the programme may 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 discovered that there was, in fact, a rural nursery network made up of individual, council school and government nurseries (e.g. Ministry of Youth). It is hypothesised in the following sections that a greater impact would have been achieved and at the same time many thousands of dollars saved, 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.

The block eucalyptus plantations are 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. Whilst recognising the impact of urban areas on deforestation this paper will not consider these issues but concentrate on social forestry and communal farmers.

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 but rather construction materials and fruit. 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 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 social forestry should be placed with the Ministry of Lands, Agriculture and Resettlement which needs to incorporate tree-planting in a more holistic approach to farming.

THE HOLISTIC APPROACH

This paper proposes that the focal point of social forestry development is within agriculture, and that trees should be an integral feature of agricultural research, extension and training. This step itself will be insufficient, because agriculture today rarely exhibits an holistic or integrated approach to development.

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, therefore, that trees will be incorporated into the agricultural extension organization but will remain isolated.

Trees form a vital component of grazing areas especially in dry regions. In recent discussions with the farmers on development issues, the farmers were keen to establish their own tree nursery to grow browse and fodder species. The trees would be planted in the grazing 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.

Developing an integrated approach is only one problem. Extension workers will also need to modify their extension style into a more sensitive, learning approach and should act as a two way link between the farmers on one side and the researchers and planners on the other.

Technology for the drier zones must be developed. 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 important, would be attempting to learn more about local conditions, problems, needs and potential. The local people are in a position to help identify useful trees and plants which could then be selected by biological scientists 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 (i.e. poles) have rarely acknowledged the many uses and roles of trees and refused to accept that farmers may be more willing to plant, for example, fodder or fruit trees, rather 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 (see Muir, forthcoming).

Until recently perhaps, 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. Indeed, a farming systems research 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 which carry out diagnostic survey work prior to a programme of on-farm experimentation and testing. A farming systems unit's aim therefore, is to strengthen and complement the work of other technical scientists, the agricultural or forestry research service by analysing the country's many farming systems in their totality and pinpointing key points for technical intervention (Collinson).

By operating among farmers, on their fields, FSR provides a link between farmers and research and between research and extension. This approach enables farmers to be part of the process of technology choice and development and for farmers' needs and problems to set the agenda for specialised disciplinary and commodity research. The approach too 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 and therefore there is need for a research and extension approach which treats trees as one of many potential productive activities that must be incorporated into the farming system. The natural home of social forestry research is within the developing and vitally important field of farming systems research.

At the same time, forestry research 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, socio-economists, livestock specialiasts, 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 focussed on the commercial aspects of forestry. There is an urgent need for these organisations 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 and the establishment and management of fuelwood plantations.

EXTENSION

The acceptance of trees as a crop and integral feature of the farming system leads to the natural development of forestry extention within the agricultural extension service. Agricultural extension workers should therefore not view the inclusion of trees in their work programmes as an extra burden but that their extension would not be complete 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 would be 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. Similarly, farmers in some areas of the country are planting jacaranda for fuelwood and timber. The farmers have discovered that this tree is easy to grow, is termite resistent, grows fast and coppices and pollards well. Developments such as these 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 and fodder and browse species are needed. Agritex have also taken some major steps in introducing agro-forestry 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 organisation.

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 (e.g. eucalyptus), indigenous woodland management, fruit and fodder trees, and the role of trees in the protection, improvement and conservation of the soil.

To meet the longer term objectives and permanent aspects of forestry training for agriculturalists, agricultural courses, at all levels, will require a forestry component within the curriculum. 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 say two 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 undersanding, if any, of the dynamics of rural communities. Foresters who are destined to become the specialist 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 trining for both the agriculturalist and forester (agro-forester) should be the agricultural college.

Nevertheless, forestry colleges need to broaden their curriculum 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 such as the Rural Afforestation Project, to recruit agriculturalists. Agriculturalists are better equipped to carry out farmer-extension activities and have a deeper understanding of the rural situation than foresters. Therefore, a short forestry course for the agriculturalists is all that is required, at this particular stage of development, to create suitably qualified forestry extensionists. For the future too, it may be a sounder investment for countries to look to the agricultural sector for forestry extension staff.

CONCLUSION

Ideally, rural afforestation-type projects should comprise of multi-disciplinary teams, (agriculturalists, socio-economists, foresters, 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 forestry organizations. But nevertheless, it should now be abundantly clear to the foresters that a main objective of the programme 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 agriculturalists have, in the past, often regarded trees as something alien, which must be eradicated from the landscape, but attitudes are changing.

The problems mentioned in this paper of a non-integrated view to agricultural development and inappropriate extension approaches are being recognised by agriculturalists. The establishment in Zimbabwe 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, Agritex is developing a diagnostic approach for its extension workers in the field.

Thus, agricultural organizations are undergoing some important evaluations and fundamental changes. Agriculturalists and foresters should seize this opportunity to include trees in this process of change. The time is therefore ripe for a major step forward in social forestry development.

Already, there are a number of encouraging signs especially on the part of the agriculturalists. The farming systems research unit, in Zimbabwe, has called for the inclusion of foresters within the FSR team. In Malawi, the new Natural Resources College, which trains agricultural extensionists, has a major forestry component within the curriculum.

Integrating forestry extension into the national agricultural extension network relieves the forestry organization of establishing a parallel exension system. But at the same time, forestry

organizations need to broaden their programmes to include, for example, the management of indigenous woodland for local communities and assist councils in commercial forestry development 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 areas could be achieved through existing agricultural supply centres, rural shopkeepers and the many school, council and private nurseries that 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 organizations but could be handed over to local nurserymen to own and manage.

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

Existing organizations and networks should be utilised to develop social forestry. Relatively less funds are required if they 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.

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