

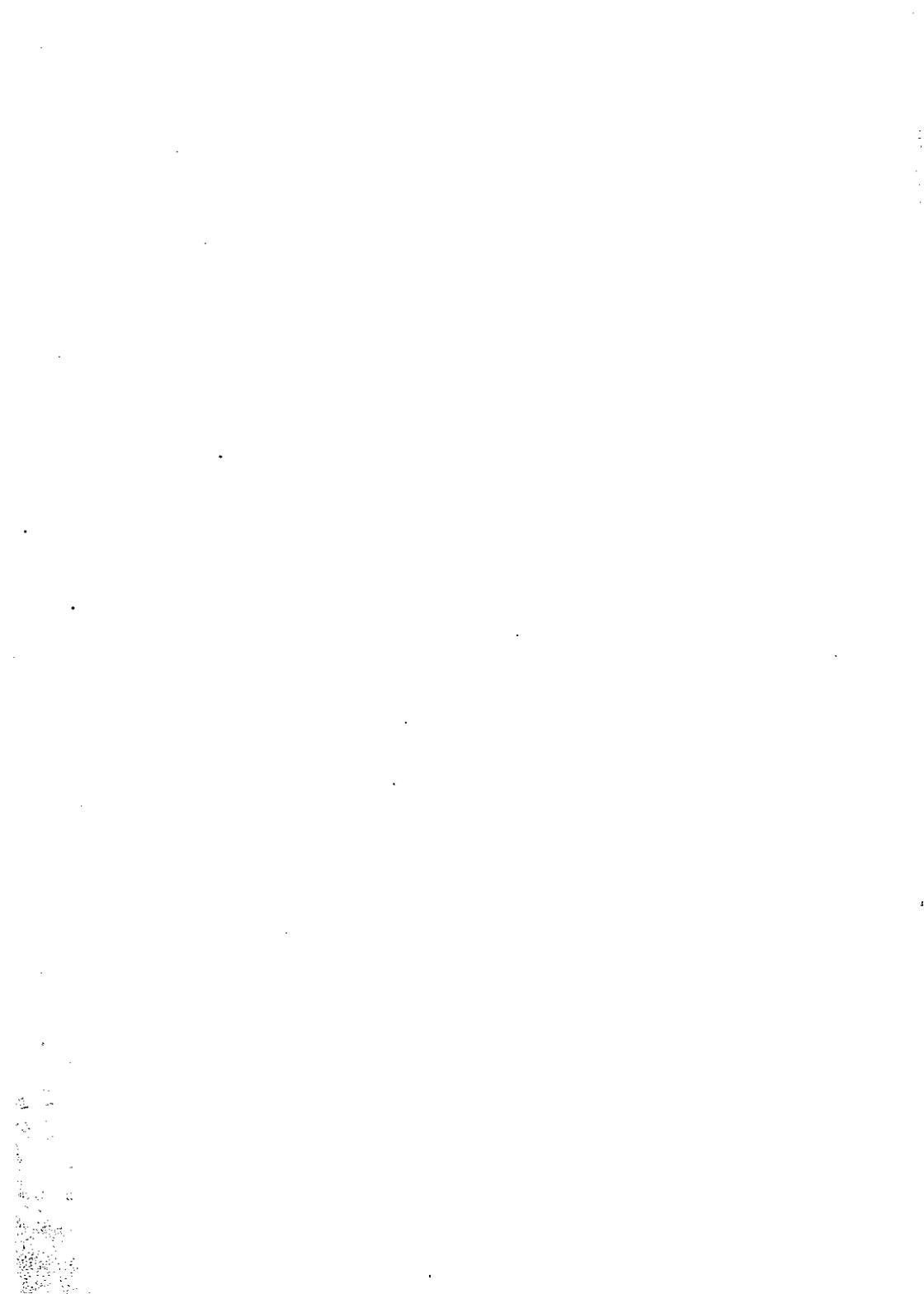


SOCIAL FORESTRY NETWORK



A HUNDRED RECENT JOURNAL ARTICLES ON SOCIAL FORESTRY

Edited by Asmeen Khan



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These bibliographical summaries were compiled at the request of networkers, many of whom do not have access to international journals and periodicals containing social forestry articles.

The following journals were searched for relevant articles: Agricultural Administration; Agroforestry Systems; Ceres; Commonwealth Forestry Review; Development Digest; Ecologist; Economic and Political Weekly; Indian Forester; The Journal of Developing Areas; The Journal of the Inter-American Foundation; Population and Development Review; Unasyuva; World Development.

Since the literature in this field is now considerable, only articles published after 1980 were generally considered. Articles were selected on the grounds of clarity, the presentation of original and interesting data or because they offered helpful overviews or guidelines. An attempt was made to ensure the representation of most geographical regions. The summaries are intended to be of use without reference, necessarily to the articles they summarise. Length is an indication of the articles' interest.

1. 'Economic principles to appraise Agroforestry projects', P.A. Harou, Agricultural Administration, Vol 12 No 3, 1983, pp127-141.

Agroforestry has existed as a form of indigenous land use for a long time. Current interest has focussed on agroforestry as a means to preserve tropical and arid ecosystems and ensure food self-sufficiency. The important economic principle in a multiple cropping system is to increase input to any one crop so that the marginal value product of this input is equal in each alternative use. Agroforestry project appraisals should consider impact on individual participants, marginal return of the forestry component and risk diversification in the proper cultural context.

2. 'Pulpwood treefarming in the Philippines from the viewpoint of the smallholder: An ex-poste evaluation of the PICOP project', Eric L. Hyman, Agricultural Administration, Vol 14 No 1, 1983, pp23-49.

Evaluation of the PICOP project showed that assured markets, price guarantees, technical assistance, species suitability, and infrastructure were critical in smallholders adopting tree planting practices. Disincentives, particularly for poor farmers were: inflation outpacing loan size; exclusion of harvesting costs; lack of agroforestry integration; and Government price control of millgate prices.

3. 'Monitoring and Evaluation of forestry projects for Local Community Development', Eric L. Hyman, Agricultural Administration, Vol 19 No 3, 1985, pp139-161.

Monitoring and evaluation of FLCD projects are essential to improve the operation of the project and its impact.

4. 'Forest villages: an agroforestry approach to rehabilitating forest land degraded by shifting cultivation in Thailand', S.A. Boonkird, E.C.M. Fernandes, and P.K.R. Nair, Agroforestry Systems, Vol 2 No 2, 1984, pp87-103.

Forest villages have been established in Northern Thailand to encourage shifting cultivators and the landless to settle. Settlers are provided with 1.6ha on a yearly basis to grow tree plantation and food crops and land for a house and

homegarden. Social facilities plus monetary incentives for seedling survival are provided. Adoption has been slow due to low yield from food crops and land availability in the area.

5. 'Women and Agroforestry: four myths and three case studies', Louise Fortmann and Dianne Rocheleau, Agroforestry Systems, Vol 2, 1985 pp253-272.

Authors state that women are ignored in the implementation of forestry development programmes due to prevailing myths held by donors and local ministries about womens' role in agricultural production, and decision making. Figures shown by authors demonstrate that women are actively involved in decision making and are often household heads. If agroforestry projects are to be implemented successfully women must be included as they grow crops, keep livestock and are the primary consumers of forest products. Three case studies from the Dominican Republic, India and Kenya illustrate the importance of women's participation in Agroforestry projects. Concludes by stating that participation benefits are not the same for men and women. Priorities differ, there is a differential access to resources and social class plays an important role in participation.

6. 'The Chagga homegardens: a multistoried agroforestry Cropping system on Mt. Kilimanjaro (Northern Tanzania)', E.C.M. Fernandes, A. Oktingati and J. Maghembe, Agroforestry Systems, Vol 2, 1984, pp73-86.

The Chagga homegardens in the foothills of Mt. Kilimanjaro have been well-documented. These systems incorporate production of food crops, cash crops such as coffee and fuel and fodder trees for animals. Recently these homegardens have come under pressure owing to population increase, migration of labour and depression of world coffee prices. This system could be improved by introduction of more productive tree species and improved animal husbandry.

7. 'Farmers participation and Socio-Economic effects of a Watershed management programme in central Java (Solo river basin, Wuoko Watershed)', Rumpoko Dewo Daru and Walter E.J. Tips, Agroforestry System, Vol 3, 1985, pp159-180.

A self-help watershed management project in densely populated central Java is discussed in terms of its achievements in combining physical, social and economic activities. Tree planting was one of the components used to induce farmers to participate. Statistical analysis of farmers in project with control subjects show that farmers in the project area use their land more intensely by intensification of intercropping systems and homegardening. Participation is linked to education and size of landholding. Large farmers are more willing to participate as increased intensification does not immediately result in increased net income.

8. 'Traditional agroforestry, parcel management, and Social Forestry Development in a pioneer agricultural community: the Case of Jala-Jala, Rizal Philippines', Harold Olofoson, Agroforestry Systems, Vol 3, 1985, pp317-337.

Case study of traditional agroforestry systems found in a community of migrant Filipino farmers. The University of the Philippines Social Forestry Department is carrying out a social forestry programme with migrant farmers who have settled on erosion-prone upland sites. A survey carried out on the upland parcels has identified that most farmers are utilising traditional agroforestry systems that fall into 6 basic types. Agroforestry is used to enhance soil fertility, provide erosion control, produce charcoal, fodder, support for yams and to lessen agricultural input. These existing technologies should be incorporated and improved by the Social Forestry programme.

9. 'Integration of animals in rubber plantations', Ismail Tajuddin, Agroforestry Systems, Vol 4 No 1, 1986, pp55-66.

Malaysia is the biggest producer of rubber in the world, ^{yet} over 76% of the area under rubber is in smallholdings of less than 40ha. Intercrops with bananas and pineapple are common till canopy closure of the rubber trees. Weeds are a problem once closure occurs and need to be controlled by expensive

herbicides. Recently animal production of sheep and poultry has been introduced to utilize the space and diversify productivity. Sheep feed on the palatable weed species producing a 22% saving on weed control. They provide a cheap source of protein and reduce surface erosion caused by the herbicide. The economic returns from sheep and boiler poultry production are high and help utilize the available surplus labour in the smallholdings. Apiculture has also been introduced with production of over 3 kg of honey per hive per year being recorded.

10. 'Multipurpose trees and shrubs on farmlands in Tamil Nadu state (India)', R. Jambulingam and E.C.M. Fernandes, Agroforestry Systems, Vol 4 No 1, 1986, pp17-32.

Tamil Nadu in South India has a diversity of ecozones with matching traditional agroforestry systems, using crops and livestock. Agroforestry is popular due to accessible markets, and a stable demand for tree crops unlike other perennials which require high labour and other inputs. The Government is also encouraging agroforestry by providing credit.

11. 'Making Social Forestry Work', Marie-Christine Comte, Ceres 74 Vol 13 No 2, 1980, pp41-44.

The problems inherent in a sylvo-pastoral and community development project in Morocco are discussed. The project's long term goal was to conserve and increase development of livestock reared in the forest. However, distrust between pastoralists and the forest service needed to be overcome. Animals apart from providing food and clothing, represent power and prestige in this transhumant society. Fodder and grazing rights in forest lands are vital for herd survival in the dry months. However user rights are complex being based on traditional relationships. Current forage production cannot meet demand. The author hopes livestock numbers will be reduced through herd improvement and quotas, so grazing grounds will be replenished. The responsibility of these grazing grounds will be in the hands of communal councils who will establish a dialogue between Forest service and users.

12. 'The Peasant view of conservation', Ann Thrupp, Ceres 82 Vol 14 No 4, 1981, pp31-34.

Costa Rican peasant farmers are well aware that deforestation causes land degradation and trees should be conserved, however they lack the means and incentives to carry it out. Tax incentives are available but only for wealthy landowners. Increased cattle ranching by large farmers who clear cut forests to provide new pastures has been the main cause of deforestation.

13. 'Fuelwood: the private energy crisis of the Poor', E.M. Mnzava, Ceres 82 Vol 14 No 4, 1981, pp35-39.

The existing fuelwood situation in Tanzania has led to a widening deficit between demand and supply. Over 250 man days per annum are expended by an average family in collecting fuelwood which represents a lost income potential of 430 shillings. Governments need to develop policies with fuelwood production being the primary objective.

14. 'Better Criteria for Forestry Investment', M.K. Muthoo, Ceres 82 Vol 14 No 4, 1981, pp40-44.

Policy planners often take a narrow view of forestry's role. The forestry sector provides a plethora of products apart from timber such as fuelwood, tannins, gums, medicinal plants and plays a vital role in maintaining agricultural productivity and soil fertility. The returns from such benefits are not taken into account in investment appraisals by Government policy makers, hence the lack of funds directed to this sector.

15. 'Selling agroforestry', John H. Casey, Ceres 96 Vol 16 No 6, pp41-44.

Description of an agroforestry project in Malawi where Leucaena leucocephala and Acacia albida were introduced into farmers' fields to increase soil fertility.

16. 'Protecting the Small-scale dairymen. Gujarat's Campaign for fodder reserves', Kirin N. Shelat, Ceres 102 Vol 17 No 6, 1984, pp43-45.

Poor rural families in Gujarat are encouraged by the state to raise cattle and buffalo as a source of income. The milk is marketed through a co-operative union. These poor families have little or no land and are particularly vulnerable when drought reduces fodder supplies. The state has introduced a comprehensive programme to develop fodder research on four main categories of land; private holdings, communal grazing areas, grasslands under the Forest department and government wasteland under the revenue department. As part of the social forestry programme in Gujarat the Forest department is promoting fuel and fodder plantations on community land.

17. 'The dubious Case for state control', P.J. Stewart, Ceres 104 Vol 18 No 2, 1985, pp14-19.

The majority of forest land is state owned. The author states that countries with a history of communism or colonialism tend to have state forests. However proprietary rights between the state and the private sector are shared in many ways. The arguments for state ownership are the following: the time-scale involved in forestry, the environmental issue, and the large areas with low value per unit area. However, the bulk of deforestation has occurred in state-owned forests. The author argues that afforestation by the state on state-owned land is not the only solution, private planting can be encouraged by grants, loans and tax incentives. Farmers living next to state forests should be involved, to reduce the confrontation between forest guards and forest users.

18. 'The Complexities of Community Forestry', Aaron Mgeni, Ceres 104 Vol 18 No 2, 1985, pp19-24.

A general overview on the complexities of community forestry, as communities are very heterogenous. A series of community forestry models from the PICOP project in the Philippines to the role of women in the Chipko movement is discussed.

19. 'Trees on Cropland: preserving an African heritage', Gunnar Poulsen, Ceres 104 Vol 18 No 2, 1985, pp24-28.

Trees form an integral part of the agricultural landscape in Africa. Certain tree species such as Acacia albida, shea-butter trees and Parkia biglobosa are carefully managed and preserved in fields. Many of these trees have disappeared from the landscape due to population pressure, fuelwood cutting, overgrazing, leading to water and wind erosion and nutrient loss. A number of development projects have reintroduced trees into farmer's fields through windbreaks. These windbreaks can dramatically decrease wind erosion, but there are drawbacks as they reduce crop yield by competing for water and nutrients, and through micro-climatic heating effects.

20. 'In praise of shrubs', Noel Vietmeyer, Ceres 104 Vol 18 No 2, 1985, pp28-32.

The author illustrates the multipurpose use of shrubby plants, in providing food, fodder, wood, medicine and industrial materials. Cites some well known examples such as Calliandra calothyrsus and Leucaena leucocephala.

21. 'Rice is more than a dietary staple: a study of its non-food uses', Frank Denton, Ceres 105 Vol 18 No 3, 1985, pp39-42.

The author cites exclusively from two articles, the first by Briscoe who carried out a detailed study on biomass consumption in a Bangladesh village. He found that rice, apart from providing food, produced fuel, and animal feed for livestock and in terms of biomass percentage 30% was used for fuel whereas only 13% was used for food. The introduction of high yielding rice varieties instead of the traditional floating rice, reduces the amount of biomass available for fuel.

22. 'The prosperity approach to forest community development in Java', Soekiman Atmosoedaryo and S.G. Banyard, Commonwealth Forestry Review, Vol 57 No 2, 1978, pp89-96.

The Indonesian state forestry corporation is involving forest dwellers in forestry through a community development approach. Forest communities are employed in taungya activities, by setting up base camps with social facilities. Multipurpose tree species are provided for garden plots.

23. 'Forestry for Local Community development: Manpower, training and education requirements', L. Roche and R. Cooper, Commonwealth Forestry Review, Vol 59 No 2, 1980, pp163-179.

Agroforestry and community forestry have little or no lasting effect in the absence of a government commitment to forestry as an instrument for rural development and in the absence of an appropriately trained indigenous manpower. Taking into account FAO guidelines in forestry for local community development, manpower requirements are estimated and projected for seven east and north-east African countries. The prevailing situation in each country in regard to training and education in forestry is discussed and examples of existing curricula are given. Though there is a shortfall in professional foresters and technicians, the region has the potential to fulfill both requirements, with external support and curriculum revision.

24. 'The forestry/agriculture interface: some lessons from Indian forest policy', G.F. Taylor, Commonwealth Forestry Review, Vol 60 No 1, 1981, pp45-52.

Agricultural production and industrial development are key priorities in developing nations. However the potential contribution of forestry to agricultural development until recently has been ignored. The forestry/agriculture interface is distinguished by the protective role forests play, the provision of a wide variety of products to agricultural communities, and the competition for land between forestry and agriculture. A historical account of the oscillations in Indian forestry policy is given to illustrate this point. The forest department was established in 1865 to provide industrial products for the British, and preserve forest reserves. In 1894 a revision was made giving agriculture priority on forest lands but this was retracted in 1952 by the Indian National forest policy. This oscillating policy has led to a number of problems such as cowdung being substituted for fuelwood and the short supply of forest products to communities in intensive agriculture areas. It is thus critical for foresters to take a broader perspective and design forest policy that encompasses all facets of forest use.

25. 'The implications of Community Forestry Projects Gujarat, India', Simon Bonvoisin, Commonwealth Forestry Review, Vol 61 No 2, 1982.

The key features for a successful community forestry project are: settled village lifestyle, demonstration, extension, strong community organisation and a monetized economy where a cost is associated with fuelwood and its collection.

26. 'Replenishing the World's Forests: the future of the World's tropical forests', Louis Huguot, Commonwealth Forestry Review, Vol 62 No 3, 1983, pp195-200.

The author states that there are two patterns of forest destruction: permanent destruction through changing land use and temporary destruction caused by shifting cultivation. The rate of destruction varies from 0.58-0.38% per year. Only 1ha is replaced for every 10ha lost.

27. 'Replenishing the World's Forests: Tropical reforestation: an achievable goal?', John Spears, Commonwealth Forestry Review, Vol 62 No 3, 1983, pp201-217.

Tropical forests are rapidly declining. The emphasis needs to be shifted from conservation to development by focussing on improving the quality of rural farmers' lives. The root of deforestation is poverty and the shift of land use to more productive agriculture. Four World Bank-funded projects are looked at in terms of stabilising rural communities and arresting shifting cultivation: Malaysia - Jengka Triangle project; Kenya - industrial afforestation; Indonesia-transmigration; and Philippines smallholder tree farming. Past failures by both national government and the international community in forestry development projects have had high economic and social costs. Well designed forestry investment programmes help accelerated grass roots management to contain the negative effects of deforestation. Examples of successful agroforestry projects from Gujarat, Philippines, Costa Rica, Ethiopia show that projects need to be broadly based and provide farmers in those areas with an alternative to forest and rangeland destruction. In the majority of developing countries supplies of forest products are insufficient to meet future demands. Investment will be required in fast growing plantations. Over \$8 billion will be

required over the next five years for projects to contain deforestation in 58 priority countries.

28. 'Community Forestry Development in Nepal', Janet Stewart, Commonwealth Forestry Review, Vol 63 No 2, 1984, pp121-127.

Community forestry was initiated in Nepal in 1980 to halt deforestation in the middle hill area. Forest land, nationalised in 1956 was handed back to the panchayat in 1978. The project aims to supply fuelwood and fodder trees through village nurseries. Women need to be involved, as they are the main collectors of fodder and fuel.

29. 'Wood as a source of fuel in upper Shaba (Zaire)',

F. Malaisse and K. Binzangi, Commonwealth Forestry Review, Vol 64 No 3, 1985, pp227-239.

The bulk of energy requirements in African countries are met by non-commercial sources of energy such as firewood and charcoal. Deforested zones surrounding large African towns and cities are growing. The author provides a table of major African cities, towns, radius of deforestation and firewood and charcoal use. In Zaire 76% of energy consumed is derived from wood. The author looked at deforestation in the Lubumbashi quadrangle in upper Shaba province of Zaire. Comparison of present wood resources with those at the beginning of the century show a decrease of 18.8%. If the population of the largest towns in the region grow at 2% wood supplies will be depleted by the year 2050. Present needs of Lubumbashi could be met by a reforestation programme with a rotation period of 20-25 years covering 20% of the territory.

30. 'Agroforestry as an aid to rational rural development in Vanuatu', P.E. Neil and P.A. Jacovelli, Commonwealth Forestry Review, Vol 64 No 3, 1985, pp259-266.

Forestry plantations for local supply and industrial purposes have been established in Vanuatu, a Pacific island. Local land tenure, where clans rather than individuals own land, is a major constraint to tree planting. Agroforestry demonstration plots using Cordia alliodora intercropped with subsistence crops are being used to encourage participation.

31. 'Deforestation issues in developing countries. The Case for an Accelerated Investment programme', J. Spears, Commonwealth Forestry Review, Vol 64 No 4, 1985, pp313-343.

Deforestation and its associated problems can be contained by supporting the tree planting initiatives of NGOs. The World Resources Institute task force report states that \$8 billion over the next five years is required in 58 priority countries to halt deforestation.

32. 'Biogas production in China', Vaclav Smil, Development Digest, Vol XVII No3, 1979, pp25-28.

Biogas digesters are used to provide fuel and fertilizer in 70% of households in the Szechuan province of China.

33. 'Community Forestry: the South Korean Experience',

Erik Eckholm, Development Digest, Vol XVII No 4, 1979, pp11-20.

Community forestry will not materialise on the needed scale without major changes in the way foresters conduct business. Experiences from countries such as China and South Korea which have carried out successful community reforestation schemes, shows that large scale policy change and the setting up of new institutions is essential for community forestry. The South Korean Community Forestry Scheme was helped by a major programme started in 1971 in which villages were mobilized to carry out community development work. The new Forestry campaign was launched by setting up village forestry Associations, to act as the link between the Government and the Community. These VFA's planted, tended and harvested the woodlots on communal lands and distributed fuelwood amongst households. Thus the creation of intermediary associations and policy reform, plus the social factors which encourage participation, are necessary for successful community forestry programmes.

34. 'Forestry projects and Development', Graham Donaldson, Development Digest, Vol XVII No 4, 1979, pp21-31.

Forestry has long been ignored as a rural economic development strategy due to the long payback period associated with it. This can be offset by using fast growing species and multiple cropping strategies.

35. 'Afforestation and Fuelwood in China', Robert Taylor, Development Digest, Vol XVII No 4, 1979, pp31-35.

China's mass afforestation programme in the 1960s had set backs because of poor seedling survival rates, due to lack of expertise. Renewed afforestation since the cultural revolution places greater emphasis on aftercare of trees and fuelwood production for local communities.

36. 'Biogas Systems in India: Is the technology appropriate', Jonathan B. Tucker, Development Digest, Vol XXI No 1, 1983, pp41-47.

Biogas generators, even though they produce a fuel and fertilizer have not been readily adopted in India. The socio-economic constraints limiting adoption are: small farmers not having the required capital, labour or animals to invest in such digestors; and social taboos involved in cooking with gas generated from wastes.

37. 'The World Bank vs. the people of Bastar', Bharat Dogra, Ecologist, Vol 15 No 1/2, 1985, pp44-48.

In recent years, India's massive reafforestation programme has caused controversy. The official policy appears to be to replace natural forests with commercial species such as Eucalyptus, which reduce food availability and employment for the poor. Current forestry projects funded by the World Bank, such as the Madhya Pradesh Forestry technical assistance project in Bastar district, appear to accelerate the process of forest destruction. Forest villagers derive various benefits from natural forests which cannot be expressed in monetary terms. Villagers use the Sal forests for collecting food, fuel, fodder, medicines and a variety of products. Children and old people play a major role in collecting this produce, and once the forests are replaced their labour is lost. The natural forests also meet many social needs of villagers, as well as providing an important supplement to their agricultural income.

38. 'Why India's forests have been cut down', B.B. Vohra, Ecologist, Vol 15 No 1/2, 1985, pp50-51.

The depletion of Indian forests is due to a number of reasons. Increasing pressure on forest lands by human and cattle populations, encroachment, resettlement, irrigation and industrial projects and the increased demand for forest products. Spiralling prices of forest products and new roads through previously inaccessible forest areas have led to unauthorised felling of large tracts, by forest contractors aided and abetted by corrupt politicians. This illegal felling has been difficult to detect owing to collusion from the forest department, as well as the current system used to classify forest areas. Under the present system denuded wasteland can be counted as forest. This has helped to hide the truth from the Government and the public so that there has been little increase in Government money being allocated to the forestry sector, and low rates of afforestation.

39. 'Encroachment on Forests: Government versus people', Sharad Kulkarni, Economic and Political Weekly, Vol XVII No 3, 1982, pp55-59.

The current Indian Forest Bill is an 'encroachment over people's rights on forests'. The bill will deprive forest dwellers of usufruct rights in protected forests for minor forest products of social value and give forest officers wide powers to arrest people and seize property.

40. 'Rural Energy Scarcity and Nutrition. A New Perspective', Srilatha Batliwala, Economic and Political Weekly, Vol XVII No 9, 1982, pp329-333.

Rural women work harder than men in terms of calorific expenditure. Much of this is expended in fuel and fodder collecting and cooking. Appropriate technology would help reduce this deficit.

41. 'Towards a Social Forest Policy', Sharad Kulkarni, Economic and Political Weekly, Vol XVIII No 6, 1983, pp191-196.

A synopsis of Indian forest policy from 1878 to the draft Forest Bill of 1980. Indian forestry policy has progressively stressed the management of state forests for the larger public interest at the expense of local forest dwellers. Current forestry policy classifies forests into production, protection and social forests. Under present forest department policy, social forests are given the lowest

priority and rights of forest dwellers are ignored by a policy slanted towards forest-based industries and urban populations.

42. 'Eucalyptus: Why?', Mahasveta Devi, Economic and Political Weekly, Vol XVIII No 32, 1983, pp1379-1381.
Indigenous species-diverse Indian forests are being replaced by commercial monocultures of Eucalyptus for the rich.
43. 'Meeting basic needs through Micro-Planning: Central role of essential Forestry', Vinod K. Huria, K. T. Achaya, Economic and Political Weekly, Vol XVIII No 34, 1983, pp1476-1491.
Planning for local community needs through the integration of Forestry, agriculture and livestock is essential for dealing with the constraints of land, fertiliser and food shortage. Local needs for fuelwood, fodder, food and timber can be met using a wide variety of multi-purpose species adapted to a variety of ecological zones. This article illustrates some of the species that could be used, conditions for growth and socio-economic benefits obtained.
44. 'Energy in a Stratified Society Case Study of firewood in Bangalore', A.K.N. Reddy and B.S. Reddy, Economic and Political Weekly, Vol XVIII No 41, 1983, pp1757-1770.
A systematic approach to answering the question of how much fuelwood is consumed by an urban population in a developing country. This study looked at the entire fuel cycle of generation and production of fuelwood to its transport, distribution, utilisation and consumption and the implications this has for the environment and future energy costs. The study found that 50% of total fuelwood comes from private forests 120-150km away from Bangalore and 35% from private lands 30-40km away. Some fuelwood is supplied by the Government Forest Department, but most by private contractors through co-operative societies, and via retail depots. The bulk, 85% of the fuelwood, enters Bangalore on trucks run on subsidised diesel which has a high foreign exchange cost for the government. Over 78% of fuelwood is used by poor households for cooking and heating water. There is a high correlation of fuelwood consumption with per capita income. The demand is projected to increase rapidly, and unless measures are taken to replace the biomass which is being removed in a non-renewable way, and to introduce energy efficient cookstoves and water heaters, widespread environmental degradation will occur.

45. 'Forestry in British and Post-British India: A Historical Analysis', Ramchandra Guha, Economic and Political Weekly, Vol XVIII No 45, 1983, pp1940-1945.

A historical background to the genesis of the Indian Forest Act and the current debate on government forest policy. The new Indian Forest Act seeks to further extend the already extensive powers enjoyed by the bureaucracy to control extraction and transmission of forest produce. The government views increasing population pressure and livestock of forest dwellers as the primary cause of deforestation rather than the conspiracy between timber contractors and mid-level forest department employees. The use rights of forest dwellers were historically determined by colonial forest officers who decided what the forest dwellers' customary rights were. This system led to widely differing forest user rights for tribal peoples in different areas, with the State retaining effective control and ownership of forest land. Flexible user rights were granted depending on the socio-economic situation.

46. 'Women and Cooking Energy', Srilatha Batliwala, Economic and Political Weekly, Vol XVIII, Nos. 52 & 53, 1983, pp2227-2230.

In India, women's access to cooking energy resources are determined by the family's socio-economic status. Those with little or no land use agricultural residue rather than fuelwood. Geographic location also determines fuel use. Traditional cookstoves are energy inefficient and smoke produced is hazardous to health. Cooking energy also increasingly determines women's nutritional level and that of the family. Fuel scarcity leads to reduction of cooking time or fewer meals, leading to nutritional deficiency or ill health. Women's calorific intake decreases even though energy expenditure is higher than men's on certain activities. Traditional nutritional cereals are being replaced by faster cooking ones. Improved cook stove technology is often socially unacceptable and calls for the involvement of female researchers, who understand better than men the problems associated with cooking.

47. 'Women and People's Ecological Movement: A Case Study of Women's Rule in the Chipko Movement in Uttar Pradesh', Shobita Jain, Economic and Political Weekly, Vol XIX No 41, 1984, pp1788-1794.

The Chipko movement began in 1973 in the sub-Himalayan region of India, to preserve forests and traditional mountain ecosystems. Women have played an important part in the movement because of their role in agriculture and collecting fuel and fodder. Men do not perceive these problems as they tend to be migrant labourers. Involvement in the movement has increased women's power and status.

48. 'Eucalyptus in Rainfed Farm Forestry: Prescription for desertification', J. Bandyopadhyay and Vandana Shiva, Economic and Political Weekly, Vol XX No 40, 1985, pp1687-1688.

Eucalyptus plantations introduced as 'social forestry' on the drylands of India will lead to desertification. Eucalyptus has a high water and nutrient demand, prevents undergrowth or intercropping and produces less biomass than other multipurpose species. It is suitable only as an industrial species for pulp and poles.

49. 'Environmental Conflicts and Public interest science', V. Shiva, J. Bandyopadhyay, Economic and Political Weekly, Vol XXI No 2, 1986, pp84-91.

The upsurge of people's ecology movements have been in response to the threat of their survival base. The dwindling forest resources in India has pushed the paper industries to locate new sources of supply, stimulating the transfer of agricultural lands to social forests. The scientific argument based on increasing economic productivity of these areas has been used to legitimise such commercial enterprises. Organisations such as Chipko have used an ecological argument to counter such development.

50. 'Coming tragedy of the Commons', V. Shiva, Economic and Political Weekly, Vol XXI No 15, 1986, pp613-614.

The current wasteland development programme in India is simply a means to privatise common land. Only a few marginal and landless farmers will gain at the cost of the majority who derive a wealth of benefit from these lands.

51. 'Agri-silviculture - A System holding great promise for Social forestry in Bihar', J. Mishra, Indian Forester, Vol 105 No 9, 1979, pp638-643.

Agrisilviculture has been introduced in Bihar as a means to rehabilitate degraded lands. Villagers are reluctant to grow trees alone, but intercropping with cash crops would remedy this.

52. 'Social Forestry in Tamil Nadu', J. Wilson, The Indian Forester, Vol 105 No 10, 1979, pp700-706.

Afforestation of government lands outside the reserved forests was taken up by the state of Tamil Nadu from 1960 onwards, under a farm forestry programme. The areas chosen are mainly the sides of the numerous tanks in the state and barren hillsides. The scheme has been successful and extensive areas have been planted. The revenue raised by sale of forest products is shared by the Government and participants involved on a fifty:fifty basis.

53. 'Towards a research agenda for social forestry', Jeff Romm, The Indian Forester, Vol 106 No 3, 1980, pp164-189.

Research in Forest cropping systems, economies of production and Government delivery systems are essential for promotion of social forestry.

54. 'Assessing the benefits and costs of social forestry projects', Jeff Romm, The Indian Forester, Vol 106 No 7, 1980, pp445-456.

Intangible benefits from social forestry projects, are not as easy to quantify as direct benefits, but often outweigh them. A structural assessment is suggested for the benefit-cost analyses of social forestry projects to be undertaken at three levels (a) the project as a whole (b) the project from separate village and departmental perspectives and (c) the project from the separate perspectives of village groups that may significantly affect and be affected by project outcomes. At all levels, analysis requires three kinds of information about project caused changes: (i) the direct benefits and costs of the plantation (ii) the benefits and costs of plantation-caused changes in land and labour use, (iii) the effects on the above of long-term trends in population, relative prices, wages, substitutes for forest products,

social forestry technology, irrigation road development and changes in scale and efficiency of agency operations.

55. 'The Uncultivated Half of India (Part I)', Jeff Romm, The Indian Forester, Vol 107 No 1, 1981, pp1-24.

Half of India's land is uncultivated and publicly used. The potential contribution of this resource towards economic growth has been ignored. A policy framework needs to be formulated to promote development of these lands. Current land use, administrative and market structures are examined with those that would provide growth.

56. 'The Uncultivated half of India (Part II)', Jeff Romm, The Indian Forester, Vol 107 No 2, 1981, pp69-85.

This second and concluding part discusses features of administrative and market systems that affect uses of uncultivated lands and considers how they might be modified to increase investment in these lands. Aspects of policy that presently constrain or might stimulate investment in the uncultivated half, are considered. Present policy does not appear to be governed by the aim of increasing land productivity but by considerations which have become inconsistent with that aim.

57. 'Pilot Survey of fuel consumption in rural area II', S.R. Sagar, L.P. Chandula, M.Y. Ansari, The Indian Forester, Vol 107 No 8, 1981, pp477-486.

Fuel consumption survey carried out in North East India, showed that though total fuel consumption per capita is similar, the firewood component varies with socio-economic status and accessibility to forest.

58. 'Agro-Forestry practices and prospects as a combined land use system', P.C. Goswami, The Indian Forester, Vol 108 No 6, 1982, p. 385.

Agroforestry is a new name for an old practice. Taungya systems previously integrated trees with crop cultivation, though these systems did not meet the basic needs of the people involved.

59. 'New dimensions of social forestry in Forest Development Corporation Areas with special reference to Nasik Project Division', D.A. Marballi, The Indian Forester, Vol 109 No 8, 1983, pp531-540.'

The forest development corporation of Maharashtra state in India is trying to involve the local tribal people in forestry activities to prevent deforestation and damage of valuable timber plantations. A number of social measures such as buffer plantations of fuelwood species, education, and improved woodstoves are being used to 'win over' the local adivasi community.

60. 'Importance of Socio-Economic Factors and the role of incentives in controlling shifting cultivation in North-East India', P.C. Goswami, The Indian Forester, Vol 111 No 1, 1985, pp1-2.

Shifting cultivation in India is a major land use problem. Increasing population has led to shorter fallow periods and lower agricultural yields. Government soil and water conservation projects and afforestation with commercial tree crops have failed due to the lack of socio-economic surveys determining peoples' attitudes and incentives required for success.

61. 'Socio-Economic factors associated with the use of wood in an Arid District of Western Rajasthan', S.P. Malhotra and H.S. Trivedi, The Indian Forester, Vol 111 No 2, 1985, pp110-118.

Wood fuel consumption in Rajasthan is correlated with household size, settlement pattern and religious group.

62. 'Fuelwood use in a peasant community: a Tanzanian case study', Patrick C. Fleuret and Anne K. Fleuret, The Journal of Developing Areas, 1978, Vol 12 No 3, pp315-322.

Fuelwood is a vital energy source for African households. Wood consumption in African countries is increasing exponentially with population increase. Forestry planning is difficult to implement due to the lack of data on fuelwood consumption in peasant households. The authors helped address the issue by measuring fuel use in a village in N.E. Tanzania, where villagers had free access to wood from a forest reserve so consumption rates were not depressed. The results show that average family size was five members and their daily consumption was 22.4kg. of wood, which required

twelve hours/week to collect. Women, who are the main collectors of wood, do not collect it daily especially during the rainy season. This means that the average weight collected is nearly 33kg. If less time and effort were spent in firewood more could be devoted to subsistence agriculture. Charcoal was also used intermittently but was expensive compared to fuelwood.

63. 'The historical context of Social Forestry in the Kumaon Himalayas', Richard P. Tucker, The Journal of Developing Areas, 1984, Vol 18 No 2, pp341-356.
'Social forestry' in the Kumaon hills arose as a response to exploitation of this region by the Forest Department. Increased legislation, restricting local people's rights to forest products in favour of timber contractors led to political insurrection. In 1922 legislation was introduced handing revenue board forests back to the panchayats.
64. 'Providing public lands for smallholder agroforestry in the Province of Ilocos Norte, Philippines', Eric L. Hyman, The Journal of Developing Areas, Vol 18 No 2, 1984, pp177-181.
The article describes the communal tree farm programme started in the Ilocos Norte area of Philippines in 1979. The objective of this project was to uplift the socio-economic condition of small marginal farmers, accelerate the rehabilitation of denuded forest areas, through agroforestry, and increase fuelwood production. Low income farmers received small parcels of land 0.25-1ha in size on a 25 year renewable lease. Highest priority was given to shifting cultivators, forest occupants and villagers near cooperative sites. Technical expertise and free seedlings were provided by the Forest Department. Farmers had to devote 80% of the land to tree crops. Cost benefit analyses of the project using different scenarios showed that benefits were susceptible to the discount rate used and shadow pricing for labour. The project has been faced with difficulties; the majority of farmers are not landless; tree farming is carried out as a part-time activity, more land is devoted to rice and mangos, rather than leucaena due to the greater return from agriculture; constraints on land and labour, difficulty in obtaining seedlings, and arson due to jealousy have also hindered the project. However, participants are willing to participate in similar projects in the future, particularly if given free land and inputs.

65. 'Deforestation in Parts of Western Ghats region (Kerala) India', Srikumar Chattopadhyay, Journal of Environmental Management, Vol 20, 1985, pp219-230.

Deforestation in the Western Ghats is caused by the establishment of commercial crop plantations initially, followed by large scale developmental activities.

66. 'The Ayoreode-Zapaco Communal Sawmill: A Social forestry project in Eastern Bolivia', Shelton H. Davis, Grass Roots Development: Journal of Inter-American Foundation, Vol. 9 No 2, 1985, pp2-10.

The Ayoreode Indians of Eastern Bolivia have set up their own sawmill project through external funding and help. Previously the forests in this area were exploited by external contractors with no benefits going to the community. Through this project employment is generated for the community as well as the Indians gaining technical skills for managing and utilising their forests.

67. 'Energy Use and Social structure in a Bangladesh village', John Briscoe, Population and Development Review, Vol 5 No 4, 1979, pp615-643.

Distribution of natural resources in a Bangladeshi village is related to the control of these resources and the structure of the social institutions present. The production and distribution of food, fodder, fuel and fertilizer was investigated in a sample size of 50% of the village population. The findings showed that traditional patron-client relationships, through which poor and landless members of the village used to gain access to fuels such as crop residues from rich landowners' fields, have broken down. Under the present system distribution of land and other resources takes place within people of the same class. The poor people, particularly the Hindu minority, are constrained by lack of storage and drying spaces. Driftwood is either collected from the riverbank or bought in the marketplace. The bulk of income of such families is spent on food, if the amount spent in fuel increased this would result in the reduction of calorific intake below 1,200 kilocalories daily. The introduction of energy-saving technologies would be ineffectual due to the control of resources and power by the richer members of the community.

68. 'Can farming and forestry Coexist in the tropics?'
John S. Spears, Unasyiva, Vol 32 No 128, 1980, pp2-13.

Forestry can play an important part in supporting agriculture and alleviating rural poverty provided people's basic needs are met.

69. 'Community Forestry depends on Women', Marilyn W. Hoskins,
Unasyiva, Vol 32 No 130, 1980, pp27-32.

Women are dependent on forests for food, fodder and medicine as well as fuelwood. In Africa women use wood for commercial purposes such as smoking food and cooking snacks to sell in markets as well as for domestic consumption. The role of women in forestry is often ignored leading to project failure.

70. 'Fuelwood production in traditional farming systems',
B. Ben Salem and Tran Van Nao, Unasyiva, Vol 33 No 131, 1981,
pp13-20.

Traditional farming systems in Africa and Asia show a high degree of integration of foodcrops with trees for fuelwood production and maintenance of soil fertility. An example of such systems are the occurrence of Acacia albida trees in farmers' fields in Africa.

71. 'Why is it so difficult to grow fuelwood?', Raymond Noronha,
Unasyiva, Vol 33 No 131, 1981, pp4-13.

The success or failure of community wood-lot projects are due to social and political rather than technological reasons.

72. 'An African city runs out of fuelwood', Henry Chauvin,
Unasyiva, Vol 133 No 133, 1981, pp11-22.

A study of the fuelwood supply and demand in Ougadougou.

73. 'Women and the energy crisis in the Sahel',
Jacqueline Ki-Zerbo, Unasyiva, Vol 33 No 133, 1982, pp5-11.

Women in the Sahel are the primary collectors of fuel, in rural areas. A variety of materials from fuelwood, to dung and millet stalks are used as fuel. The 1973 petrol crisis compounded with the drought has meant that women have to walk further to collect fuel. In urban areas fuelwood costs up to 40% of household income. Improved stoves have not been successful as they are sociologically incompatible with women's cooking techniques.

74. 'Orienting Forestry toward the needs of people', L. Worou and Tran Van Nao, Unasylyva, vol. 34 No 136, pp8-11.

Fuelwood shortage in Benin has led to increasing use of agricultural residues as fuel, causing loss of soil fertility and crop yield. Multipurpose, nitrogen fixing tree species are being introduced to remedy this problem.

75. 'The Non-wood products of African forests', Gunnar Poulsen, Unasylyva, Vol 34 No 137, 1982, ppi5-22.

African dependence on forests for the needs of everyday life tend to be ignored by many land use planners and development officials. Apart from providing wood products and commercially important products such as gum arabic, african forest, provide a wealth of foods in the form of leaves, oil rich nuts, fruits and animal products, as well as medicinal plants and fibres. The economic and social benefits of these products are difficult to quantify, but they are an integral part of African life.

76. 'Smallholder tree farming in the Philippines', E.L. Hyman, Unasylyva, Vol 35 No 139, 1983, pp25-32.

The PICOP smallholder project, where farmers are provided with credit to grow pulpwood for paper industry corporation, was replicated in Ilocos Norte also in the Philippines. Here participation has been less successful, even though fuelwood and fodder components were introduced, due to the strong cultural attitude towards incurring debt.

77. 'Why Stoves are resisted?', Bina Agarwal, Unasylyva, Vol 35 No 140, 1983, pp22-28.

The success of a wood stove depends on how much wood it saves and whether it is acceptable to rural users, especially women from poor households.

78. 'Using farm trees for fuelwood', Gunnar Poulsen, Unasylyva, Vol 35 No 141, 1983, pp26-29.

Pruning and pollarding of trees on farms can provide an important source of fuelwood to the rural economy.

79. 'Forestry extension: Community development in Nepal', E. Pelinck, P.K. Manandhar and R.H. Gecolea, Unasylyva, Vol 36 No 143, 1984, pp2-13.

Community forestry extension in Nepal poses special problems not found in agricultural extension, such as the time lag before benefits are accrued from tree planting and the problems associated with communal decision-making. Since 1978 state forests have reverted to communal ownership and management. A separate wing of the Forest Department has been established to provide extension to implement community forestry.

80. 'Honduras: Women make a start in agroforestry', Mercedes Wiff, Unasylyva, Vol 36 No 146, 1984, pp21-27.

Socio-cultural constraints in Honduras prevent women from participating in terracing and reforestation schemes. Women are seen primarily as housewives and child-bearers, and men lose face if their wives are seen to work. This barrier has been partially overcome in a project run by the Forest Department Corporation where older women are involved. Access to credit and education is critical for women's involvement.

81. 'What does fuelwood really cost?', P. Wardle and M. Palmieri, Unasylyva, Vol. 33 No 131, 1981, pp20-24.

The market price of fuelwood in developing countries does not represent the cost of collecting fuelwood or of replacing the forest. The price may be so low in some countries that it provides no incentive to economise on fuel consumption.

82. 'Village industries vs. Savanna forests', E.M. Mnzava, Unasylyva, Vol 33 No 131, 1981, pp. 24-30.

The shortage of wood for village industries is often overlooked. Village industries such as tobacco curing, tea drying, fish smoking, brick burning, pottery, local brewing consume considerable amounts of wood charcoal. The use of wood could be substituted by coal, oil, kerosene, hydropower and biogas if incentives are provided.

83. 'Agroforestry systems: a primer', N.T. Vergara, Unasylyva, Vol 37 No 147, 1985, pp22-29.

The use of the term agroforestry by researchers in different regions has led to confusion due to the variation that exists in agroforestry systems. Agroforestry may be defined through the arrangements of component crops either temporally or spatially. Crop rotation systems include taungya or shifting cultivation. Intercropping systems include: border tree planting; alley or row cropping; and random mix which occurs in home gardens.

84. 'Women, Wood and Work: in Kenya and beyond', Lori-Ann Thrupp, Unasylyva, Vol 36 No 146, 1984, pp36-46.

Fuelwood projects will not solve the forest problem as they have failed to involve women who are the ones directly affected. Kenya provides an interesting case study where a large number of local women's organisations are involved in promoting tree planting. However, these projects often do not confront deeper socio-economic or political problems. Local needs and past experience should be incorporated in project formulations.

85. 'Community forestry and building success through people's participation', Y.S. Rao, Unasylyva, Vol 37 No 147, 1985, pp29-36.

The prerequisites for successful community forestry are political commitment, assessment of rural needs with appropriate technical solutions, extension, suitable rural institutions and research support. The constraints are insecurity of land tenure, bureaucracy, lack of coordination and managed forestry tradition. Reorientation is necessary if forestry is to help the rural poor.

86. 'The Social dimensions of forest utilization agreements', Richard D. Pardo, Unasylyva, Vol 37 No 147, 1985, pp36-44.

Logging companies in the past have mined forest areas with little regard for forest dwellers. Legislation is currently being implemented to protect people's rights. Forest utilisation agreements should protect customary rights, allow involvement in timber utilisation and provide infrastructure.

87. 'Forest farmers: the transformation of land use and society in Eastern Madagascar', Clare Oxby, Unasyuva, Vol 37 No 148, 1985, pp42-52.

Deforestation of the tropical rain forest in Eastern Madagascar is caused by traditional hill farmers who practice slash and burn agriculture to grow upland rice. The alternative to this is irrigated wet rice production which appears to be more profitable. However, there are many social and cultural economic constraints to adopting this new method of cultivation. The constraints are lack of suitable land, autonomy and freedom as hill rice farmers have to work for richer farmers, who own most of the suitable land for irrigated rice.

88. 'Non-governmental organisations: Increasing NGO involvement in Forestry: Some implications from Senegal', Jill Carr-Harris, Unasyuva, Vol 37 No 149, 1985, pp26-32.

During the international year of the forest, 1985, FAO is making a special effort to encourage the participation of non-governmental organizations at the international, regional, national and local levels. NGOs can provide a bridge between forest departments and local populations. To test the potential of NGOs a pilot programme was developed in Senegal in February 1985 in which 38 NGO representatives from Senegal and representatives of NGOs from other Sahelian countries, and Kenya met for a week of meetings on reforestation activities which included workshops and site visits. Some of the technical issues raised were: the advantages of eucalypts versus indigenous species; problems of seed and water availability, improvement of agroforestry techniques, lack of literacy in an area where technical assistance was being given, absence of training in local languages, and failure of forestry projects to respond to traditional agroforestry systems of pastoralists.

89. 'Desertification in the Sahelian and Sudanian zones of West Africa', Jean Gorse, Unasyiva, Vol 37 No 150, 1985, pp2-19.

'Drought alone does not in the short run produce resource degradation of the sort now found in the Sudanian-Sahelian zone'. Desertification is a complex process caused by interactions between drought and human abuse of the environment, a common indicator of desertification being a reduction in the amount and diversity of plant and animal species. The challenge is effectively to manage resources south of the desert, the problem of desertification being a conflict between public long term resource use and private short term resource abuse. Trees play an important role in countering desertification and an integral role in the traditional agro-silvo-pastoral land-use systems, by protecting and regenerating soils, producing fodder in the dry season, wood and other forest products. Resource management strategies should be based on the relationship between rural population and carrying capacity by zone. The need for a permanent regional centre focussing on identifying and improving Sudanian and Sahelian tree and shrub species is indicated.

90. 'Trees food production and the struggle against desertification', El Hadji Sene, Unasyiva, Vol 37 No 150, 1985, pp19-27.

The interrelationship existing between cereal crops and the contribution of woody species to the human diet in the Sudanian/Sahelian zone has long been known but ignored. Tree species provide an invaluable food buffer primarily during the critical dry season. This resource is rapidly declining due to several factors; reduction of tree populations, competition from urban consumption, and lack of a proper place for these resources in forest management and rural regulations.

91. 'Tanzanian tree-planting: a voice from the villagers', E.M. Mnzava, Unasyiva, Vol 37 No 150, 1985, pp33-41.

Village and urban communities in Tanzania are dependent on biomass energy for their household activities. Government-run village nurseries and woodlot establishment projects to meet this demand have often not been successful, as a top down

bureaucratic approach has been used to deal with villagers. Their preference in choice of species or time availability to plant tree seedlings is often not taken into account. Nurseries are often located in regional centres, reducing the availability of seedlings to people in rural villages. A number of recommendations are made to overcome these policies.

92. 'Rural organisations in forestry', C. Chandrasekharan, Unasyuva, Vol 37 No 150, 1985, pp2-11.

To achieve the goals of forestry or rural development public sector bureaucracy, private sector institutions and local organisations need to work together. The article covers the roles various agencies play such as Forest departments, parastatals, private sector organisations and local organisations using a bottom-up approach in achieving this goal.

93. 'Mobilizing Rural Communities', Marilyn Hoskins, Unasyuva, Vol 37 No 150, 1985, pp12-13.

Glimpses of reforestation strategies used by three different countries, Nepal, Haiti and Senegal, working with local communities through village/community councils or local NGOs.

94. 'The evolution of forestry legislation for the development of rural communities', Christian du Saussay, Unasyuva, Vol 37 No 150, 1985, pp14-23.

Forestry legislation in Africa has been primarily concerned with the extraction of timber. Traditional usufruct rights of rural communities have never been legally defined.

95. 'The forest resource and rural energy development', Matthew S. Gamser, World Development, Vol 8, 1980, pp769-780.

Current data on forest energy production fails to understand rural energy-use patterns. Forest fuels and fuelwood consumption are region-specific, but often those consumption patterns are overlooked by planners. Land tenure, institutional limitations, the time-scale involved with trees, and the difficulty in getting communities to work together are some of the common constraints associated with rural energy development projects.

96. 'Indicators of Rural Inequality', Alfonso Peter Castro, N. Thomas Hakansson, David Brokensha, World Development, Vol 9 No 5, 1981, pp401-427.

A comprehensive list of indicators that can be used to measure wealth differences between households in the same community are provided. The most important indicator is control of land, followed by capital, equipment, consumer durables, income, livestock. Non-productive indicators include housing, consumer goods, fuel, ceremonial expenditure and diet. Methodological issues such as seasonality, local perceptions, informant ranking and bias are discussed. Case studies from India, Gambia, Tanzania, Nigeria and Mexico are used to illustrate effective and specific use of indicators.

97. 'Traditional fuel usage and the rural poor in Bangladesh', J.J. Douglas, World Development, Vol 10 No 8, 1982, pp669-676.

The choice of material used as fuel such as fuelwood, leaves, twigs, agricultural residues are linked to individual land holding an indicator of socio-economic status. Most of this material comes from homestead forests which are being felled at a rate of 10% of standing volume per year. Since over 50% are composed of slow-growing species like mango and jackfruit, existing traditional fuel energy supply cannot be maintained. Community based projects are difficult to implement in the face of extensive landlessness and powerful village elites.

98. 'Diffusion of rural innovations: Some analytical issues and the case of Wood-burning stoves', Bina Agarwal, World Development, Vol 11 No 4, 1983, pp359-376.

The diffusion of rural innovations is likely to be conditioned by the technical, economic and social characteristics of the innovation. Those innovations which require financial inputs for a marginal return, and which are aimed at socially disadvantaged people are unlikely to be accepted, as has been illustrated by improved cookstoves.

99. 'Fuel, Food or Forest? Dilemmas in a Nepali Village', Deepak Bajaracharya, World Development, Vol 11 No 12, 1983, pp1057-1074.

The primary cause of deforestation in the Nepalese hill region is the need to increase food supply rather than fuelwood cutting. This microanalysis assessing demand and

supply for food and fuel demonstrates that policy reform in food production and distribution is needed to control deforestation. Over 86% of the fuelwood is collected by logging trees and collecting deadwood rather than felling, the rest coming from agricultural residues and from around the homestead. Food shortfalls can be very localised due to low agricultural inputs. New farming land is mainly acquired through forest clearance using shifting cultivation, and is difficult to control because of undefined forest boundaries. Currently, fuelwood consumption exceeds supply in some villages in this particular study, but with increased deforestation the situation will deteriorate. Local people need to be involved in formulating projects to ease the situation.

100. 'Energy and the Poor in an Indian Village', Varun Vidyarthi, World Development, Vol 12 No 8, 1984, pp821-836.

The history of the current energy distribution patterns amongst villagers in a North Indian village were investigated. Traditionally under the zamindari system patron-client relationships between the rich landowners and marginal and landless villagers ensured a supply of firewood and agricultural residues and dung for cooking purposes. After land reform, these relationships broke down, and poorer landless farmers lost access to traditional agricultural residues. This was also due to the rich landowners investing in irrigation for new cash crops with less residue compared to the traditional rainfed crops of pigeon pea and spiked millet, which seasonally supply residues for up to 73% of fuel consumption. This has led to landless and marginal farmers using toxic spring plants as a fuel source. These poor farmers are not interested in investing in fuel-saving devices or community forestry in village lands as they would rather invest in income-generating schemes to improve economic and social position.

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