

TES Special Issue on

The Importance of Local Knowledge and Interdisciplinary Research

People, Trees and Agriculture in Africa: Constraints and Options for Improved Management of Trees in Tanzania and Burkina Faso

Iben Nathan, Senior Researcher
Forest & Landscape Denmark, Copenhagen University, Denmark
E-mail: in@life.ku.dk

Søren Lund, Associate Professor
Department of Environment, Technology, and Social Studies, Roskilde University, Denmark
E-mail: slund@ruc.dk

Ida Theilade, Senior Researcher
Forest & Landscape Denmark, Copenhagen University, Denmark
E-mail: idat@life.ku.dk

For this special issue of TES we have selected four articles on constraints and options for managing trees in Africa. The articles have been produced within a larger multidisciplinary research programme on People, Trees and Agriculture in Africa (Petrea) funded by the Danish Development Research Council 2002-2005. Research was conducted in Burkina Faso and Tanzania.

The Petrea programme

The Petrea research programme focused on how trees and shrubs can be brought into wider use by rural people in semi-arid Africa. The research objective was to identify rural people's needs in relation to trees, the constraints for improving their benefits from trees, and to propose locally adapted strategies and techniques for improved utilisation of trees. Interdisciplinary teamwork in the field and in publication of research papers remained a central feature of the research programme. The research teams had representatives from the natural as well as the social sciences and the humanities.

The research focused on two selected localities in Burkina Faso and one selected locality in Tanzania. In Burkina Faso, focus was on two villages, Noberé and Peni. Noberé is located in the southern part of Burkina Faso, close to the border of Ghana and neighbour to a protected forest. The area is located at the transition

between the semi-arid and sub-humid zones. Most of the fields surrounding the village are continuously cropped. The village of Peni lies at the South Western end of the country close to the border with Cote D'Ivoire. The vegetation is more lush than in Nobere with mango and cashew groves as well as cropped and fallow fields (Hansen *et al.* 2006). In Tanzania, the team selected the village Majawanga, which is located in a semi-arid area close to Gairo in Morogoro. The research teams identified the specific localities in co-operation with the partner institutions according to different criteria such as the ecology of the localities, the importance of trees in the livelihood of locals and the interest of the residents in becoming involved in the programme.

Background

Rural people in developing countries often depend on access to trees for a multitude of purposes. Trees provide important products such as fuel wood, construction material, fodder, medicine, and domestic utensils. Trees provide important services such as shade and wind protection, and many woody species contribute to sustainability and improved productivity in agriculture by protecting watersheds, and by stabilising and enriching the soil.¹

Rural people's access to trees has, especially in African countries, become more difficult with the global trends of deforestation and degradation of forests and woodlands. The estimated forest area for Africa is 635 million hectares, accounting for about 16 percent of global forest area. Since 1990, forest cover in Africa has declined at one of the highest rates in the world. Net annual forest loss amounts to almost 55 percent of the global reduction in the global forest area. A significant share of net forest loss is reported from Tanzania (FAO 2007). In addition to forest loss, creation of protected areas has restricted local peoples' access and user rights to forest land in many places. At the same time, however, it has become increasingly accepted that participation of local people is essential in effective management of forests. Reforms in forest legislation are sweeping through Africa enabling communities to become responsible for managing or co-managing forests through community forestry or participatory forest management (Alden Wily 2000). Participatory and action-oriented research is useful to involve communities under these new forest management paradigms. Participatory methods are a common feature of the studies presented in this issue of TES.

In Tanzania, farm plots have increasingly been privatised. It has been argued, that this has motivated farmers to invest long-term in their land, for instance, by planting trees (Danida, 1995). Moreover, agricultural policies in Tanzania and Burkina Faso have undergone drastic changes over time. This has, among other things, implied abolishment of price subsidies and withdrawal of direct state involvement in import and distribution of fertilisers and other chemical inputs for agriculture (Friis-Hansen, 1999; Danida, 1999). As fertiliser becomes expensive, many farmers are forced to look for alternative ways of regenerating the fertility of their soil, including the use of trees (World Bank, 1994).

Many factors prevent farmers from using the full potential of trees. Some of these constraints are of a technical nature. Rural people may face technical problems related to silviculture and management of particular species in farm plots. Other constraints relate to the economic and financial situation of rural people. On macro level, the market may not (yet) be geared to absorb certain tree products. On micro level, even fast growing woody species require precious time before products and services are available. A very serious constraint for management of trees is lack of land for agricultural crop production. Yet other constraints to rural people's use of trees and shrubs relate to political, social, and cultural factors. Such fac-

1 For more on functions of trees, see for instance Theilade *et al.* 2007, Belem *et al.* 2007 (this issue), Gausset *et al.* 2005, Krog *et al.* 2005, Cavendish 2000, Boffa, 1999; Brodie, Ricardo and Weber, 1997; Chambers, Leach and Conroy, 1993; Chambers, Saxena, and Shah, 1991; Johansson, 1991. On the importance of trees to soil fertility, see for instance: Nielsen 2007, Mnyonga *et al.* 2005, Belsky and Amundson, 1998; Hamilton *et al.*, 1993. On the importance of trees as fodder for livestock, see for instance Nkiema *et al.* 2005, Devendra 1995.

tors may relate to restrictive national policies with regard to trees and planting material; insecure land and tree tenure; lack of capacity of local institutions; norms and values; and conflicting interests of different groups of rural people. Finally, constraints may relate to the lack of access to information. Traditionally, extension services in agriculture are not concerned with trees, while extension services in forestry focus on natural forests and plantations while ignoring trees on farms.²

The exact nature and significance of the different constraints and opportunities, as well as the relation between them, will vary depending on the specific geographical and social context. Understanding the exact nature of constraints and opportunities as well as rural people's needs and priorities is a precondition for developing locally adapted small-scale techniques and strategies that can be applied directly and meaningfully (Simons, 1997). Such studies should, furthermore, draw on local knowledge concerning natural resource management. Previously, such knowledge has often not been utilised, or has been completely overlooked (Chambers and Richards, 1995; Danida, 1995). Closer direct or indirect interaction with farmers in elaborating strategies for the use and conservation of a diversity of tree species will require new approaches to the management and use of trees as well as to the exchange and dissemination of knowledge and plant material.

The articles

TES has previously published one other article resulting from the PETREA programme (Gausset et al. 2004). The four articles published in this special issue are concerned with either practising participatory interdisciplinary methodologies in forest management research, or with integrating the findings of multi-disciplinary studies into holistic analyses of forest management issues.

In their article, entitled "Ethnobotanical knowledge: Implications for participatory forest management", Theilade et al. describe the use and relative importance of woodland tree species compared to trees retained or planted on private land. Like the paper by Gausset et al. the authors analyse tree preferences and management in different land tenure types. The authors conclude that conservation measures are necessary to maintain valuable indigenous species. Furthermore, the results points to the role local peoples' knowledge and cultural institutions can play in the new generation of community based forest management plans to be developed.

In "Use of Non Wood Forest Products by local people bordering the Parc National Kaboré Tambi, Burkina Faso", Belem et al. identify the constraints faced by local people to harvest the park plant products, analyse the park vegetation structure and assess the degree of regeneration of the main useful species. The surveys reveal that bordering people consider the park as their granary, their pharmacy, their pasture, their place of religious worship, and the source of the strength of their territory. Technically, conservation by domestication of the source species and improved harvest of non wood forest products could be combined for sustainable management of the park. Finally, it is concluded that the integration of ecology, silviculture, legislation, economy and decentralisation is critical to sustainable management of the park.

In their article "Why Combine Private and Communal Tree Management?", Gausset et al. discuss the different types of constraints which are broadly linked to the management of private tree resources and common woodlands. They argue that both types of management regimes should be analysed together, as overcoming management constraints of one can help relieve the pressure on the other.

² Some of the technical constraints on managing trees are discussed in, for example Mnyonga et al. 2005, Mugasha et al. 2005 and Holding and Omondi, 1998. On political, cultural, and social factors affecting management of trees, see for instance, all the articles of this issues, Ræbild et al. 2007, Chambers, Saxena and Shah, 1991; Cline-Cole, 1996; Mearns, 1995; Mellor 1997; Nazarea-Sandoval, 1995; and Oates, 1999. E.g. Danida 1995; Johansson and Westman, 1992 point to the problem of lack of access to information.

The fourth article by Nathan et al. enters the discussion about decentralised natural resource management in the article "On the promises of devolution". The authors identify the main constraints encountered by the village council in Majawanga for efficient and equitable management of the common wood lands. The authors conclude that due to the nature of these constraints, even a perfectly decentralised management system will paradoxically need higher levels of government to take an active and supportive role.

Conclusion

The four articles have in common that they are concerned with constraints and options for managing trees on common and private lands. They draw on participatory and interdisciplinary research, and they are all concerned with learning about constraints and options from the villagers themselves. The studies demonstrate the necessity of integrating interdisciplinary research and local knowledge not only when identifying plants and their uses, but also when assessing the relative value of these plants to the farmers, and when identifying the nature of constraints and the possible options to overcome them.

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