Better trees on-farm in Africa I

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SØREN MOESTRUP, 1989

Women cleaning seed manually at the National Seed Centre of Burkina Faso (CNSF)

Better Trees on-Farm in Africa I

The contribution of National Tree Seed Centres to development of small-scale tree planting

Tree planting depends on good seed

Supply of appropriate seed of good genetic quality and in good physiological condition suited for the planting site and the purpose of production is decisive for any tree planter. The access to such good material is however often a problem, in particular for the many tree planting farmers in developing countries. This policy brief attempts to summarize what we can learn from past experience to tackle this problem.

Past support to develop supply of good seed

Support for improved tree seed supply systems has been a priority in Danish development assistance to forestry and agroforestry since the mid-1960s. Approximately DKK 500 million has been spent on this purpose in more than 20 countries over a period of 40-50 years.

The approach has varied from one region and country to another, as well as over time. Focus has generally been on production, supply, physical infrastructure and capacity building. National tree seed centres and programmes comprising seed procurement, tree breeding and conservation of genetic resources have been established. Priority has typically been given to production of tree seed by public institutions, but in some cases also to the normative functions of providing standards, guidance and mechanisms to influence and monitor the use of seed. The duration of donor support for such

Policy conclusions

- *Global policy support has been an important driver for the* establishment of a global network of tree seed programmes with a common development objective of providing good reproductive material to improve tree plantings.
- *Investment in tree seed programmes pays*. Provided partial government support is sustained after the withdrawal of donor funding, it appears possible to establish viable tree seed centres in developing countries.
- *Private and public institutions are needed to supplement each other*. Commercial seed enterprise should be separate from the normative functions of providing policies, legislation, and regulation of the market and of providing independent advice and guidance to users. Public investment in programmes for gene conservation of valuable species is required, at least as long as it is profitable to harvest the natural forest, whether legally or illegally.
- *Reaching small-holders requires a different institutional approach*. The 'informal' market of small scale tree planters is large, holding vast development potential. Public, centrally located seed production centres have so far largely been unable to reach poorer tree planting farmers and communities in rural areas. A different approach is needed to realise this potential.
- *The technical know-how is there but in risk of being lost*. Privatisation of tree seed centres has not improved their efficiency in reaching smallholders. Large shares of tree seed supply in the tropics has been taken over by NGOs distributing seed of sub-optimal quality and of relatively few species. Diminishing technical and policy level support is currently weakening the global network, even though seed programmes are essential to meet the needs of tree planting farmers now and even more as the effects of climate change progress.
- *New ways are needed to improve input supply of tree seed and planting material to the African small-scale farmers*. There is a need to rethink the relation between objectives and operational means by which the target groups are reached in order to make the global network more relevant to present-day challenges.

programmes has varied from 5 to 20 years. Some programmes continue to exist after donor withdrawal, whereas others have almost disappeared.

The challenge of providing good seed remains in particular in agroforestry

Even in the presence of existing national programmes, the lack of tree seed, seedlings and other good-quality planting material is repeatedly identified as a major constraint for greater adoption of efficient tree planting and, in particular, agroforestry innovations among small-scale tree planters.
In addition to the challenge of projecting and meeting the quantitative demands of farmers and other tree planters, issues of seed quality and genetic diversity still need to be addressed when designing and implementing effective seed supply strategies and policies.
During the last decade, there has been a clear call for decentralisation of tree seed supply with greater involvement of individuals, communities and the private sector. These goals have also been pursued in Danida's support to tree seed supply. However, hardly any international programmes or institutions in support of agroforestry and forestry seed supply systems continue to exist.

What can we learn from the past to meet the new challenges?

In search for solutions to this problem Danida commissioned Forest & Landscape Denmark (FLD) in co-operation with the World Agroforestry Centre (ICRAF) to undertake a study of lessons learnt from past experience with tree seed supply to small-scale farmers (Graudal & Lillesø, 2007). The study summarizes findings from the tree seed sector as well as the agricultural sector over some 50 years.
The understanding of good practice in tree seed supply has evolved over time. The development of ideas and practices for tree and crop seed systems has undergone changes over the past five decades fairly consistent with mainstream trends in rural development. The ideas have evolved around the relative roles of the state and markets, and on how to overcome market imperfections. Development of new ideas in the tree seed sector have in general followed those of the crop sector, but with new ideas taking longer to be adopted by the tree seed sector. The table overleaf (from Graudal & Lillesø 2007) provides a timeline of major development ideas, objectives and identified limitations in prevailing practices of tree seed production and distribution.

Table 1. Timeline of major development ideas and practises for tree seed production and distribution.

Period	Development idea	Objective	Identified limitations	Danida supported projects
1960s and 1970s	Breeding, gene conservation, seed production and distribution of industrial tree species by Public Agencies. Technical training.	Improved reproductive material to plantation programmes to supply raw material for industry.	Some programmes failed due to lack of market. Smallholders not conceived as part of the development process.	• Teak Improvement Centre, Thailand (TIC) 1965-1975 • Pine Improvement Centre (PIC)1975-1985 • Indo-Danish Tree Seed Programme 1971-1979 • Malawi Tree Breeding Programme, 1970'ies • Zambia Tree Breeding Programme, 1970'ies
1980s and 1990s	Seed production and distribution of multipurpose tree species, breeding and gene conservation by Public Agencies. Training, extension, technical and regulatory guidelines by the same Public Agencies.	Improved reproductive material to rural plantation programmes in support of rural household needs and small-scale agriculture.	High transaction costs. Limited penetration of the informal sector.	• Nicaragua Tree Improvement and Seed Centre 1983-1997 • Tanzania National Tree Seed Programme 1989-2000 • Nepal Tree Improvement Programme 1992-1997 • National Tree Seed Centres established in Ethiopia, Sudan, Uganda, Eritrea and Laos. • Indonesia Tree Seed Source Development Programme TSSDP 1993-1997
1980s and 1990s	NGO production. Shift of support from centralised to decentralised nurseries.	Improve reach to smallholders (informal sector).	Market distortion: distribution of free but inferior seed and planting material. Seed production by local growers as a business discriminated against.	• Nepal Tree Improvement and Silviculture Component 1998-2002 • Production de semences et conservation des ressources forestières dans les terroirs villageois (PSFV) 1998-2001 • IFSP/ICRAF Indonesia
1990s and 2000s	Privatisation of public agencies.	Create financial self-reliance.	Majority of smallholders does not benefit. Implementation of normative functions loses priority. Investments in breeding and gene conservation lose importance.	
1990s and 2000s	Separation of productive and normative functions.	Improve regulatory and capacity building framework. Conservation of genetic resources.	Limited impact due to too limited emphasis on support to small-size producers and seed markets in general. Separation of conservation from production in-efficient.	• Central America Tree Seed Project and Network 1992-2001 • Indonesia Forest Seed Project (IFSP) 1998-2002 • Vietnam Tree Seed Project (VTSP) 1998-2005 • Gene conservation programme, Thailand 1990-1993 • Forest Genetic Resources Conservation and Management Programme FORGENMAP, Thailand 1997-2002 • Cambodia Tree Seed Project 1999-2006
2000s	Community-level seed enterprises. (helped by NGOs)	Improve reach to smallholders.	Insufficient demand at the individual village level to maintain a commercial seed enterprise. Retail trading networks not developed.	Continuation of the NGO Production in the 1980s and 1990s
2000s	Increasing smallholders' access to appropriate sources of tree seed through supporting development of a small scale commercial seed sector.	Broader access of source seed. Support small scale commercial seed sector by reducing transaction costs in wholesale and retail seed markets; and by removing market distortions. Revitalise international collaboration to promote regional breeding and conservation programmes.	Requires public commitment and implementation on a relatively large scale.	• ISSAAC Improved Seed Supply Systems for Agroforestry in African Countries 2000-2006

Focussing on the needs of the small scale farmer, the six major conclusions and lessons learnt are as follows:

1. Global policy support has been an important driver

- International support has enabled the establishment of a global network of tree seed programmes as an essential (implementing) part of forest genetic resources work with a common development objective of providing good reproductive material to improve tree plantings. A strength of the network has been international recognition assured through the overall co-ordination of FAO since their Global Programme for Conservation and Management of Forest genetic Resources was initiated in the early 1960s.

2. Investment in tree seed programmes pays

- Investment in Tree Seed Centres for industrial tree species can provide economic return, if the product is sufficiently valuable, and if there is a market for it, but development of markets for tree seed for smallholder tree planting has proven to be more difficult.
- Some activities generate immediate income to the seed centres (e.g. commercial seed supply). Other activities gen-

erate income to the seed centres, but in the longer term (e.g. seed source establishment and management).
- Some activities generate income to other stakeholders (e.g. distribution of good planting material and extension of good practises to as many users as possible, including support to use of best available seed sources, research and development, guidelines and legislative measures, and establishment of breeding programmes). Often tree growers will reap the highest rates of return.
- Some activities generate benefits, which are difficult to quantify in terms of money (e.g. protection of genetic resources) even when they are important from societal and socio-economic points of view.
- Provided partial government support is sustained after the withdrawal of donor funding, it appears possible to establish viable tree seed centres in developing countries.

3. Private and public institutions are needed to supplement each other

- Gene conservation and, to some extent, breeding as well, will rarely be implemented in practice unless physically integrated with seed production.
- Short-term income required to sustain commercial seed sale is difficult to combine with longer-term investment in breeding and conservation.
- A commercial seed enterprise should be separate from the normative functions of providing policies, legislation, and regulation of the market and of providing independent advice and guidance to users, which should be provided by independent institutions.
- An sector based on many small seed/seedling enterprises is more likely to build robust retail trade systems for seed and seedlings rather than a sector based on a single or a few enterprises.
- Public investment in programmes for gene conservation of valuable species is required, at least as long as it is profitable to harvest the natural forest, whether legally or illegally.

4. Reaching smallholders requires a different institutional approach

- As the attention shifted from industrial plantation establishment to support for smallholder planting, the impact of national tree seed centres still pursuing the original development objective waned due to the decentralised nature of demand. Public, centrally located seed production centres have primarily served the formal plantation sector, and have so far largely been unable to reach poorer farmers and communities in rural areas using and planting trees for a multitude of purposes.
- The 'informal' market of small scale tree planters is large, holding vast development potential. A different approach is needed to realise this potential.

5. The technical know-how is there but in risk of being lost

- Privatisation of tree seed centres has not improved their efficiency in reaching smallholders; on the contrary less focus on normative functions may have the opposite effect. Large shares of tree seed supply in the tropics has been taken over by NGOs distributing seed of sub-optimal quality and of relatively few species. Consequently, the know-how built during years of national seed programme implementation is under-utilised. This poses an imminent danger of wasting the fruits of many years of investment by donors and governments.
- Diminishing technical and policy level support is currently weakening the global network, national as well as international institutions, even though seed programmes are essential to meet the needs of tree planting farmers now and even more as the effects of climate change progress.

6. New ways are needed to improve input supply of tree seed and planting material to the African small-scale farmers

- There is a need to rethink the relation between objectives and operational means by which the target groups are reached in order to make the global network more relevant to present-day challenges.

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The series of policy briefs on Better Trees on-Farm in Africa suggest ways and means to improve the input-supply and value chains of Agroforestry in Africa.

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