

**Thematic Review
of
Danida Forest Seed Centre (DFSC), 2003**

Final Report

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ABBREVIATIONS

APO	Associated Professional Officer
ASPS	Agricultural Sector Programme Support
CFSC	Central Tree Seed Company
CGIAR	Consultative Group on International Agricultural Research
CIFOR	Centre for International Forest Research
CNSF	Centre National des Semences Forestière
CTA	Chief Technical Adviser
DfID	Department for International Development
DFNA	Danish Forest and Nature Agency
ENRECA	Enhancement of Research Capacity
EU	European Union
F/FRED	Forest/Fuelwood Research Programme
FAO	Food And Agriculture Organisation Of The United Nations
FINNIDA	Department for International Development Cooperation, Finland
FORSPA	Forestry Research Support Programme for Asia
FSL	Danish Forest and Landscape Research Institute
FSSP&P	Forest Sector Support Programme and Partnership
ICRAF	World Agroforestry Centre
IFF	Intergovernmental Forum of Forests
INN	International Neem Network
IPF	Intergovernmental Panel on Forests
IPGRI	Genetic Resources Science and Technology Group
ISSAAC	The Improved Seed Supply for Agroforestry in African Countries
ITTO	International Tropical Timber Organisation
KfW	Kreditanstalt für Wiederaufbau
KVL	The Royal and Veterinary and Agricultural University
MEE	Ministry of Energy and Environment
MFA	Ministry of Foreign Affairs
MIFRESTA	Environment, Peace and Stability Facility
NARMSAP	The natural resource management sector assistance programme in Nepal
NGO	Non-governmental Organisation
NTFP	Non Timber Forest Products
PFM	Participatory Forest Management
PETREA	The People, Trees and Agriculture in Africa
RM	Review Mission
S & L	Skov og Landskab
SUA	Sokoine University of Agriculture
TAFORI	Tanzanian Forestry Research Institute
TFAP	Tropical Forest Action Plan
TISC	Tree Improvement and Silviculture Component
UN	United Nations
UNCED	Conference on The Environment and Development
UNDP	United Nation's Development Programme
UNFF	UN Forum on Forest
WB	World Bank
WWF	World Wide Fund for Nature

1. INTRODUCTION

1.1 Background

- **The Danish Policy Context**

The general background for the present thematic review of DFSC is partly a reorientation of Danida support to development research, following the Hernes commission, and partly a reorganization of the Danish sector research, cf. the background described in Terms of Reference, attached as Appendix 1.

The "Hernes Commission" reviewed Danish development research in 2000-2001. The Hernes report calls for higher integration between policy, development assistance and development research. Development research is expected to play an active role in defining the objectives of future development assistance. Although it is envisaged that development research must be more linked to actual implementation, i.e. mainly through the sector programs, it is also argued that the research environments should not only work as sub-contractors in relation to development assistance, but also play an independent role, including having more global responsibility.

In the report of the Hernes Commission it is recommended that MFA reduce the "permanent" core funding provided to the research centres (hereunder DFSC). Instead the centres should compete for the research funds, thereby ensuring that the research is based on the needs and priorities of Danish development assistance, and that MFA is purchasing research services on a need basis. The performance contracts, which the Hernes report mention as the main instrument, should "oblige" the centres to articulate goals, objectives and strategies over a 4-5 year planning period and to establish benchmarks and procedures for quality assurance of research. In return they will have stability in resource flows, levels of core funding and, in principle, greater autonomy in management of resources.

Danish Sector Research was reviewed in May 2002, and the objectives and principles outlined in October 2002. Four overall objectives have been specified in relation to the quality of research, the effectiveness of the institutions, the use of the research and internal organisation between the different institutions. On this basis, ten guiding principles for sector research were specified of which the most important are the call for open competition between research institutions, the need to have a critical mass (avoiding too small units) and the importance for establishing links between the sector research institutions, universities and the private sector.

- **Purpose and Scope of Review**

According to the Terms of Reference, the objectives of the thematic review are to provide an analysis of impact and relevance of the work of DFSC, of its future role in relation to Danish development and environment assistance and of the future institutional set-up of DFSC.

On the basis of the above described background for the review, the main issue seen from the point of view of MFA is twofold. Firstly, there is an issue of how the present institutional set-up of DFSC can be changed to fulfil the objectives of having larger research units and units with closer links to university research. Secondly, there is an issue of how to secure a resource base, which is relevant for Danish development and environment assistance in the future.

During the deskwork of the review, it became clear that the institutional options were few and realistically in practice limited to one, i.e. the integration of DFSC into the planned Centre for Forestry, Landscape and Planning (S&L) under the Royal Veterinary and Agricultural University in Denmark (KVL). As discussion about realizing this option started only at the same time as the present thematic review, it has not been possible to make a final analysis of the future institutional set-up of DFSC.

As the future institutional set-up also influences the possible future role of the present DFSC, the focus of the review has become that of facilitating the institutional integration with the aim of ensuring a sustainable and relevant future resource base for Danish development and environment assistance. The review has therefore at the same time made assessments of the present DFSC as a resource base for MFA as well as of possible future work areas for the new institutional set-up, which could be of relevance for Danish development and environment assistance in the future.

- **The Review Process**

The review has been undertaken in phases and reporting during the process has aimed at providing inputs to the institutional integration process as well as of the preliminary analytical findings.

Phasing of the review process has been as follows:

- desk work phase, March-April 2003, resulting in a Desk Study Report (April 2003),
- a fieldwork phase with visits to Kenya and Tanzania, 25 April – 9 May,
- an interim phase, which included RM participation in DFSC's Technical Advisory Committee meeting (14 May) with RM presentation of two papers (DFSC past, present and future) and submission of an Interim Report (May 2003)
- a second fieldwork phase, visiting Vietnam 19 May – 4 June
- a synthesis and final reporting phase, June 10 – June 30

The integration process started, as mentioned, more or less at the same time as the review process. The planned S&L is a merger between three institutions, which have been discussing the merger over a period of more than one year, ending with an agreed report on the future set-up of the merger of these institutions into S&L. The first contacts between the interim management of S&L and DFSC resulted in a paper from DFSC, describing its position in relation to a possible integration. This position was not acceptable to the interim management of S&L and though discussions continued, no agreements concerning the integration had been reached by the time of drafting the Desk Study Report.

After submission and discussion with MFA of the Desk Study Report, the review work continued with fieldwork in Tanzania. This work was partly focused on the past and partly on the future. Thus, the fieldwork made analyses of relevance and impact of the (now terminated) tree seed project as well as of scope for future activities, which DFSC could meaningfully become involved in and which pointed towards a broader work area in the future.

Continuing the review work on the assumption that a main purpose of the review was to facilitate the integration process, the RM contributed during the interim phase two papers to a DFSC organized workshop. The purpose of these papers was to contribute to the identification and formulation of a future work programme for the new centre, which could

justify Danida support under its development research funding. DFSC also presented a paper pointing towards a “trees for development” programme for the new centre, which would realize synergy effects by merging DFSC into the planned S&L. The workshop did also result in establishment of a working group, with representatives from both sides, which should work further on developing a program. (A first draft of this was received by the RM on June 12, 2003).

The interim phase terminated with submission of an Interim Report, which outlined the continued review work as well as the likely content of the final report. A meeting on the Interim Report was held between DFSC, MFA and the RM. DFSC indicated at this meeting that an agreement on the integration would be reached before end-June. Further, it was decided that that the review should be finalized as planned, even though the end-results of the integration process could not be known before drafting of the final report.

The second fieldwork phase, with visit to Vietnam, took place shortly after the DFSC workshop and with the same focus as the first fieldwork in Tanzania, analysing the (still ongoing) regional tree seed project activities in Vietnam and investigating possibilities for future work, related to the work profile of DFSC of the past, but again pointing also towards a broader work area in the future.

During the second fieldwork and throughout the synthesis and final reporting phase, discussions on the conditions of integration have been ongoing between DFSC and S&L. Both parties have during this period received first, incomplete drafts of the key chapters of the final report for consideration, comments and suggestions. Also MFA has received these drafts and have made comments, which have influenced the final version of the draft. Comments from DFSC and S&L on these drafts have been received and they have similarly influenced the final formulations in key sections of the draft report. It should be emphasized, however, that the planned last meeting between DFSC and S&L on June 30, 2003 had not been held by the time the draft final report was completed. Based on comments from MFA and DFSC, the draft final report was thoroughly revised to the present Final Report version.

1.2 The Final Report

- **Purpose and Content**

The final outcome of the ongoing negotiations on integrating DFSC into the planned S&L is not known at the time of finalizing this report. Furthermore, the future work programme of S&L within the development field is still to be worked out. The possible content of the proposed performance contract to be set up on the basis of such a work programme is therefore also uncertain.

On this basis, and in accordance with the decision on the Interim Report meeting, referred to above, finalization of the review process and final reporting has been made along the following lines:

The institutional analyses have focused on main issues related to the integration process. Main pro's and con's are discussed and recommendations made on that basis. It should be emphasized, as it was already emphasized in the Interim Report, that the issues are rather broad issues and they do not cover in details all the institutional issues, which such an integration process can raise. But as the negotiations have only really been intense towards the end of the review period, the process has not yet reached a stage, where these essential key

issues have been settled. As these issues can in principle be settled in different ways, the recommendations presented in this report are the recommendations of the RM on settling these issues, as they are seen by the RM at the time of finalizing the draft final report in June 2003.

An international research and development programme also needs to be worked out in more details than the preliminary programme worked out so far and presented and discussed in the present report. There is also a need to integrate the possible future work areas, identified in this report, into the programme and make it operational.

A performance contract also needs to be worked out in details, with proposed activities and corresponding funding modalities. The present report can only indicate the possible content and suggest formats for presentation.

- **Organization of Report**

Chapter 2 provides some general contextual background. DFSC was originally established in an international context. This context is constantly changing and it is important to see the functions and role of DFSC in the past as well as likely future context. This relates both to the international context and to the particular Danish context, which has also changed considerably over the 30-year period of DFSC existence.

Chapter 3 analyses the activities in the past of DFSC with particular emphasis on the period 1993-2003. It is basically an evaluative description of activities. It has not been possible to deal with all activities in details, but all main categories of activities are covered. This chapter also analyses the relevance and impact of DFSC activities from the point of view of contributing towards achieving Danish development objectives in developing countries.

Chapter 4 deals with the institutional issues, as they can be identified in relation to the present stage of the integration negotiations. The focus is on four areas, i.e. organizational structure, management, staffing and funding.

Chapter 5 assesses the resources of the future S & L. These will consist of the resources brought in from DFSC and the resources available in the other three institutions, which will merge into S & L.

Chapter 6 is focused on the future performance contract between MFA and S & L, providing guidelines for content and conditions of the contract. The chapter reports on findings of the RM concerning possible future work areas, which DFSC could move towards in order to develop the capacities and capabilities of the resource base towards a higher degree of relevance in relation to future Danish development and environment assistance. The chapter also outlines the preliminary S & L work program, building upon these findings, the DFSC present activities and the proposal of the S & L working group of June 12, 2003.

Chapter 7 contains conclusions and recommendations. It is in content and format an Executive Summary.

2. GENERAL BACKGROUND

2.1 The International Forest Context

Although tropical forests and woodlands are essential for rural livelihoods in developing countries, they have been degraded and destroyed at an increasing rate, especially over the past fifty years. This has resulted from the conflicting uses of the many goods and services that trees provide. The extent of the problem, and the direct and underlying causes, are well known and documented, as are the possible solutions.

DFSC came into being over thirty years ago when attention was focusing on the most immediate solution - that of re-establishing forests by means of tree planting, mainly by large-scale plantations for industrial timber and fuel wood, for which adequate supplies of reproductive material, mainly seed, were a prerequisite.

In the mid 1980's, the international community realised the need to coordinate and harmonise efforts to provide comprehensive solutions to the 'forest crisis'. This was first attempted via the (then) Tropical Forest Action Plan (TFAP) initiative, sponsored by the FAO, UNDP, the World Bank and the World Resources Institute. The TFAP was only a partial success, and was followed by many other international and national initiatives, in particular those arising from the 1992 UN Conference on The Environment and Development (UNCED) up to the current UN Forum on Forest (UNFF).

Many institutions were formed to address the crisis, such as the International Tropical Timber Organisation (ITTO), and CGIAR institutions, in particular the Centre for International Forest Research (CIFOR), and the World Agroforestry Centre (ICRAF).

The TFAP tried to encourage the national development of coherent and sustainable forest sector plans, and proposed five priority areas for action. They concerned: Forestry in support of agriculture, forest industries development, restoring fuel wood supplies, ecosystem conservation, and institutional support. These remain more or less valid, with the first four confirming the need for tree planting.

Initial attempts by donors to promote national plans tended to be donor-driven, creating structures parallel to national ones, and lacking national ownership. However, the approach gradually changed and improved as there was a better understanding of the social, economic, environmental and factors involved, and many countries now have, or are developing forest sector programmes that should be sustainable.

From the social and institutional point-of-view, it is now recognised that all stakeholders need to be involved and have active and appropriate participation in designing and implementing solutions to promote sustainable forest management. In an effort to achieve a better balance, emphasis has shifted from, *inter alia*, government to private sector administration (including the process of privatisation); centralised to decentralised organisation of structures; top-down to bottom-up approaches to planning (by the user, e.g. farmer); and technocratic to community implementation of activities.

With regard to economic and technological factors, increasing attention has been given to ensuring the appropriateness of technology; the need to produce a wider range of forest products and services (including NTFPs) the development of criteria and indicators for

sustainable forest management, subsequent certification of forests, and labelling of forest products. From an economic viewpoint, new and innovative funding mechanisms for all levels of stakeholders has received increased attention, as well as the need to better assess the value of goods and services provided by trees.

Greater environmental (ecological) awareness has led to an increasing emphasis on using indigenous species to provide the goods and services required, thus avoiding the potential problems associated with exotics and maximising the benefits of integrating trees into farming systems via agroforestry. An increasing understanding of the global service role of forests (e.g. in climate change, carbon sequestration and maintenance of biodiversity) has led to environmental approaches to protecting/conserving forest resources for this purpose.

People-based approaches to development, e.g. those concerned with livelihoods, have helped to address and integrate all these factors, as have more broader, geographic approaches to land use management. Sometimes the different approaches have been perceived as incompatible (e.g. passive protection v. active use of forests) but they are increasingly being seen as complementary. The greatest challenge is often to achieve a balance between the different approaches.

2.2 Future Developments

- **Forests and Sustainable Management**

The past decades have brought forests and forestry on the development agenda. It has been from a point of departure in the international loss and degradation of forests (the ‘forest crisis’) rather than the development potential from harnessing forest resources. The conversion of valuable timber sources through resource ‘mining’ and ‘rent seeking’ has been claimed as a main source of deforestation. Spill-overs from other sectors, e.g. from lack of land reforms or the environmental degradation of land, in some cases also have resulted in clearing of forest land commercially or through encroachment. The direct link between logging and deforestation appears obvious but the ‘forest crisis’ is much more complex and context dependent.

While the big picture of deforestation and loss of biological diversity does have an impact on decision makers and the general public in the industrialised countries it is not straightforward to address the underlying causes. It requires a willingness to address ‘good governance’ and ‘human rights’ issues, which experience reveals, may be difficult via a technical forest project.

In recent years more attention has come from consumers and their representatives in civil society regarding sustainable forest management. Currently the World Wide Fund for Nature (WWF) is campaigning against illegal logging, which is substantial. The initiatives towards certification of sustainable forest management are well underway globally although just about 10% of the certified forest area is in sub-tropical and tropical forests.

A likely scenario is that the attention on the forest crisis and other global environmental problems may level out even without having solved the problem despite the assistance provided. Over time it may no longer be viewed as an immediate and pressing issue. It is a tendency that the demand for forest assistance is mostly from countries with a limited forest resource with emerging scarcity that is integrated in rural livelihoods. This is contrary to countries with large forest area for commercial exploitation where the demand for external interventions is seldom seen. The Danish Ministry of Environment in March 2003 wrote to

Indonesia, Malaysia, Brazil and Russia noting the problems with illegal logging and has expressed an interest in collaboration.

- **Forests and Sustainable Livelihoods**

A quite different perspective is that seen from the rural communities living within or adjacent to forest resources. The attention is here the use of a natural resource to cover basic needs and perhaps the development of income generating opportunities. The assumption with assistance to these communities is that there are potentials to be harnessed which can improve livelihoods.

The emphasis in recent years by some donors (in particular DfID) to address poverty alleviation in a broader livelihood context has resulted in an attention on what determines and sustains the livelihoods by poor people in developing countries. It is recognised that forest resources for many could play a key role as one of the contributing factors to livelihoods. Forests are seldom the only or dominant factor contributing to livelihoods. A key basic need is supply of fuel but other uses such as building materials, medicinal plants, and food (supplementary diet from game and fruit and back-stopping if stable food crops fail). However, what may sound as a straightforward intervention is rather complex, e.g. in many cases the local communities are pleased to be users but do not invest precious time from other activities to manage the forest themselves. Moreover, the outside assistance may in some cases cut across power balances and could open up for local conflicts where the poorest are likely to loose out.

2.3 Danish Support to Forestry

- **Danish Policies and Strategies for Forests in Developing Countries**

The Danish policies and strategies for support to forests and forestry in developing countries has been a reflection of the international concerns and efforts to address a 'global forest crisis'. This has emerged with the broader attention and efforts with international environmental agreements since the 1992 summit on environment and development (UNCED).

The Danida Sector Policy on Forestry and Agroforestry (1995) stands out as a key document for the Danish forestry support. The objective of assistance to forestry and agroforestry in the sector policy is to contribute towards:

- Economic and social progress leading to improved living conditions among rural poor.
- The maintenance or improvement of the environmentally protective functions of trees and forests.
- The conservation of biological diversity.

The sector policy document is a good response to key interlinked issues that have set the agenda for forests and forestry internationally: a) deforestation with the resulting loss of soil fertility and biological diversity, b) the fuel wood gap, and c) contribution of forest products and services to rural livelihood support. The sector policy paper on forests and agroforestry unlike other Danida sector policies has never materialised because 'forests and forestry' is not identified as a specific sector for assistance, e.g. like agriculture, health or energy. Although quite recently prepared (in 1995) the sector policy document is outdated and it has provided

minimum guidance for Denmark's assistance to forests and forestry. But the document has a quality by assessing the key topics and experiences.

The strategy for the Danish Environmental Assistance (1996) lifts forests up among one of six priority areas for support although mainly from a resource protection stand. The environmental assistance has resulted in more options for support to forests and forestry than were available in the development assistance. This has also materialised in a number but scattered forest support activities.

In 1992 the Danish government issued an Action Plan for Tropical Forests. This was a policy response to emerging 'forest crisis' notably with the general public's perception of mismanagement and loss of tropical high forest. The attention was sharpened towards the international organisations and agreements but to a lesser extent towards Denmark's bilateral assistance. A status report of the Action Plan was prepared in 1997. The 2002 National Forest Programme deals more with domestic issues but confirms the Danish commitment to support forest and forestry internationally.

A positive feature has been the collaboration on international forest and forestry between the Danish Ministry of Foreign Affairs and the Forest and Nature Agency in the Ministry of Environment. The Ministry of Foreign Affairs through the Secretariat for the Environment and Sustainable Development has lead the international involvement, but it has also been with an active participation of the Forest and Nature Agency (Ministry of Environment) with their technical skills, network and motivation to promote forestry in development.

From 1994 to 2001 when part of the environmental assistance was managed by the Ministry of Environment (Danced) there were a relatively large share of forest and forestry related activities due to a strong forest profile and involvement of the Forest and Nature Agency. The Ministry of Foreign Affairs has its attention towards a wider development agenda through key sectors with relative less direct emphasis on forests and forestry. A notable exception has been the assistance provided to DFSC and support to forest tree seed projects. DFSC has been instrumental in linking activities of the two ministries.

It can be concluded that it is not policies and strategies on forests and forestry that has shaped the Danish support in this field. It is the more general policies and strategies for development and environmental assistance coupled with the issues emerging in the dialogues with partner countries, which have shaped the profile of forest assistance. The knowledge and interest within organisations also have a significant impact, which is particularly evident now that Ministry of Environment does not have 'access' to be directly involved in the environmental assistance in Southern Africa and Southeast Asia.

The Danish development strategy (Partnerskab 2000) probably has had a key role in the swing from the technical focused and project based support towards a more direct attention to impacts on poverty alleviation and programmatic interventions. It comes for example with the emerging attention to 'sustainable livelihoods' and 'community based natural resource management'. There is no recent evidence from Danish policy or strategies on support to forest and forestry in developing countries that reveals there is more or less attention to forest and forestry or a change in the relative emphasis, e.g. away from forest tree seed. It is the assessment that there is a gradual shift in emphasis from technical to more socio-economic approaches, which originates by default due to a similar shift in the main attention of the development assistance.

- **Denmark in the International Forest Policy Debate**

The Danish agenda on international assistance to the forest sector in developing countries has during the past 10 years been guided by the discussions at international fora following the UNCED 1992 Forest Principles. It has been and continuous to be an official Danish aim to work for an international legally binding Forest Convention. The United Nations has during the past decade initiated a process of intergovernmental negotiations on forests and forestry. The Intergovernmental Panel on Forests (IPF) came out with a long list of recommendations but little action. IPF was followed by the Intergovernmental Forum of Forests (IFF) and later by the United Nations Forum on Forests (UNFF). Another forum with Danish involvement is ITTO (International Timber Trade Organisation).

Denmark has been a dedicated supporter through active involvement and financial support. One example is the series of meetings held on Financing of Sustainable Forest Management (Johannesburg 1996, Croydon (UK), 1999, and Oslo in 2001). Another has been the initiative on countries with Low Forest Cover.

Despite few results, the international negotiations have been instrumental in bringing forests and forestry forward on the development agenda. An indirect outcome has been the ongoing development of a 'National Forest Programmes' in many countries. But there is a discrepancy between a substantial effort devolved to the international meetings and the lack of progress on the ground. Compared with other sectors a remarkable result in the forest sector, however, has been the development of a criteria and indicators approach to Sustainable Forest Management.

One of the more intensive and contentious international processes in forestry recently has been the review and reformulation of the World Bank forest policy (over four years from 1998 to 2002). International environmental NGOs have been remarkably active in particular regarding the lifting of the World Bank 1992 ban on lending to forest operations (logging) in tropical moist forest. Denmark kept a low profile in the dialogue of the World Bank Policy while other countries with a larger forest stake and direct involvement in larger forest programmes have been active (e.g. Finland).

- **Main Danish Support to Forest and Forestry in Developing Countries**

Denmark's support to forests and forestry has in decades been developed around support to agro-forestry and semi-arid forestry including woodlands. Among the key activities have been forest tree seed projects and other activities involving DFSC. There are no or only few initiatives regarding management of high moist forest in the tropics. Denmark is not a traditional forest nation (like e.g. Sweden and Finland) which is also reflected in the Danish support to forests and forestry in developing countries. In comparison the agricultural sector in comparison has been more dominant and thus reflecting the broader Danish expertise.

The Danish assistance to forestry can be characterised to be integrated in other sector programmes rather than being a forest sector programme approach. The Danish assistance to forestry often is indirect through the agriculture sector, e.g. small-scale with support to trees on farms and nurseries. In the environment assistance (Mifresta) support to forest and forestry has been towards community based natural resource management, capacity development and projects to protect biological diversity. Danish support through the NGO window has a large number of forest related projects, which do reflect that the pressure on forests in developing countries and the emerging conflicts are issues taken up by civil society.

The Danish bilateral development assistance is mainly provided through sector programmes. The natural resource management sector programme in Nepal (NARMSAP) is one of the few sector programmes with a significant element of assistance to forestry, i.e. community forestry, but the programme is also on watershed management. The agricultural programmes often have forest related activities, e.g. as a source of fuel, fodder and Non-Timber Forest Products (e.g. Tanzania). Some of the energy sector programmes includes traditional energy components with management of fuel wood sources (e.g. Ghana and Mozambique). While Danish support falls more within community involvement and resource protection and creation (e.g. nurseries) there are no activities supporting commercial high forest operations or forest industry development.

The Danish environmental assistance has in the recent decade significantly increased the Danish support to forests and forestry. The assistance has included capacity development and support to forest policy development (e.g. Swaziland), to strategies on participatory forest management (e.g. South Africa), to implementation of community based forest management (e.g. Tanzania), to forest tree seed programmes (e.g. in Indochina) and to control of illegal logging (e.g. Cambodia). The support to forest operations, e.g. to improved efficiency in small scale logging operations (e.g. Malaysia), has been more an exception than the rule. In many circumstances forests are indirectly supported, e.g. mangrove management in Coastal Zone Management Projects (e.g. in Viet Nam). The flexibility of the environmental assistance has resulted in a varied support responding well to local demands but with a tendency to be scattered.

The nature of Danish support to forests and forestry is that it is patches within sector programme support, individual projects in the environmental assistance spanning across a wide topic area or NGO projects. The assistance is complementary to the overall assistance rather than being one of the trade-marks of Danish development or environment assistance. This is also a reason that there is no a clear overview of the total forest related development assistance.

- **Future Danish Development Assistance to the Forestry Sector**

‘Forest and forestry’ is not expected to be a key sector for Danish development or environmental assistance. But ‘forests and forestry’ are likely to continue to be a relevant sub-sector in the agriculture and environment sectors. Danish development and environmental assistance has managed to develop some ‘fingerprints’ like community participation, international forest policy and forest tree seed, where the Danish assistance can be measured in comparable standards as more traditional ‘forest’ countries (e.g. like Sweden, Finland, Switzerland and Canada).

The demand from Danida for technical assistance, a resource base and development research is in quantitative terms proportional to the volume of the assistance and in qualitative terms according to the main focus of the development assistance.

The volume of the annual Development and Environmental assistance to forest and forestry is roughly estimated to be in the order of DKK 50-80 million. The future direction of the Danish assistance to forests and forestry is foreseen to fall under the following main headings:

- Forests and trees for sustainable livelihoods – This will include community based natural resource management (e.g. participatory forest management) where the local conditions make it a likely success for development. But other options with a less formalised

commitment locally may also be of relevance in particular as elements of agriculture sector programmes. It will also include the contribution from improved and domesticated forest tree seeds.

- Support to development and implementation of National Forest Programmes – The National Forest Programmes will become a vehicle for institutional capacity development and reforms in the forest sector. Denmark is not expected to be able to take a lead role in such programs, but could be a suitable partner together with other donors.
- From illegal logging to sustainable forest management – This is a topic of particular policy interest and strategically the development assistance should be able to respond to these issues. It requires further discussion whether development and environment assistance shall be directly supporting certification of sustainable forest management. Danida has supported Forest Stewardship Council (FSC) with a programme in Africa.

It is fair to note than when it comes to Danish assistance to forests and forestry there is a remarkable ability to fill niches and enter into collaboration with bigger partners. DFSC is one excellent example. One reason is that without a strong domestic forest base there is little tradition for large technical solutions but more attention to small-scale interventions and social issues. The Danish ‘forest expertise’ is found in several institutions and there is scope for gains through continued and expanded networking.

3. DFSC: PAST AND PRESENT

3.1 Overview

- **The Origin of DFSC**

DFSC started in 1969 as the Danish/FAO Forest Seed Centre, forming part of an internationally coordinated programme formulated by the FAO Panel of Experts on Gene Resources, supported by Danida. It changed name to DANIDA Forest Seed Centre in 1981. In 1997, the project status was terminated, and the Danida Forest Seed Centre was established as a public, non-profit Danish institution, directly under Danida.

During this period, the international community sought to coordinate and harmonise donor efforts to address the tropical forest crisis, for example through the TFAP (cf. Chapter 2), and DFSC continued to be delegated with the task of helping to ensure adequate supplies of forest seed. The work has covered the three technical fields of seed supply: *gene conservation, tree improvement and seed procurement*. In agreement with other donors and technical institutions, DFSC initially concentrated on exploration and establishment of species and provenance trials of trees important to large-scale plantations, particularly within the South East Asian region.

The focus has been on conservation of remaining trees and forests, improvement of their quality, and increase in their extent, which can only be done by natural or artificial regeneration. In both cases, of key importance are *forest genetic resources* i.e. the genetic "blueprints" of trees, and the reproductive means (seed or vegetative propagation e.g. cuttings, grafts) by which they are transferred from one generation to another, thus maintaining diversity, quality and quantity of trees. These resources have been the focus of DFSC's activities since its inception, limited mainly to seed for plantations.

Institutionally, DFSC has since the very beginning had a close collaboration with TIS (Danish Tree Improvement Station) of the Forest and Nature Agency in the Ministry of Environment. The expertise at TIS is part of the technical foundation for DFSC. DFSC and TIS share the director and DFSC is housed at TIS using its facilities for seed handling, testing and storage. There has been some inclusion of TIS staff in DFSC activities, e.g. in the support to Danida tree seed projects. Training and short-term attachment of individuals from developing countries is also undertaken in collaboration with TIS. The collaboration between DFSC and TIS is good and there are technical, institutional and administrative synergies.

- **Changing Context**

Activities of the DFSC have changed in response to the changing international context noted in Chapter 2. In the 60's, regeneration efforts were centred on large-scale commercial plantations of fast growing species of global interest (e.g. eucalyptus, pines, teak, acacias, and poplar). Tasks included exploration, collection and distribution of seed from different sources (i.e. provenances). During the 60's and 70's, seed was exchanged between countries interested in establishing international trials to assess the performance of species and provenances. Seed programmes were set up to promote this process, and were generally centralised and governmental.

In the 80's and 90's, there was a fuller understanding of problems in the forestry sector, and interest shifted gradually to identifying trees suitable for small-scale plantations, agroforestry,

and on farms, which could provide a range of non-timber forest products as well as wood. Such species were less well known, locally distributed (i.e. indigenous), and best used in the context of participatory forest management by local communities. At the same time, international interest of donors shifted to the environment, biodiversity conservation and sectoral approaches that were integrated and multidisciplinary.

Many large-scale companies now have their own supplies, based on a small number of highly specialised genetic quality (e.g. hybrids) seeds. Therefore, the key bottleneck are in the small-scale supply and demand for the large range of lesser-known multipurpose species, used locally on farms. Because of the lack of information about the species used, and the cost of obtaining seed and distributing it, it is unlikely that private companies will give it the attention that it deserves.

It is easier to demonstrate that "good seed doesn't cost, it pays" for larger scale, commercial plantations (where there are easily measurable traits such as straightness and growth rate) than it is for small-scale, multipurpose trees planted on farms. It is also more difficult to help obtain the required quantities. Whereas planting programmes might require 1000 kg of seed from five species - now the need is for less than a kilogram of 500 or more species. Reproductive material continues to be a vital link in all aspects of natural resource management (natural forest, watershed, coastal zone, agroforestry, rehabilitation of degraded lands, national parks, biodiversity conservation etc.), given the fact that planned management of the genetic resources and reproductive material involved will improve the results.

- **DFSC Strategies**

As DFSC until 1997 was treated as a Danida project, it has followed the project cycle procedures until then. The last review took place in 1993, based upon which a 5-year strategy was developed. This was revised in year 2000.

The content of the first strategy, the 1995-Strategy, which to a large extent reflects the traditional role and functions of DFSC, is described in the "Project document, DFSC" (August, 1994) and "DFSC, Strategy and Work Plan 1995-99". The objective of the project was "Upgraded production, supply and use of physiologically sound, genetically well adapted and improved planting material for tree planting in developing countries". The focus was on adaptive research mainly in the three technical fields of seed supply: gene conservation, tree improvement and seed procurement. (see above).

From 2000, DFSC work was guided by a revised strategy "Challenges and priorities in management of forest genetic resources 2000-2005" (cf. Annex 3). This strategy reflects adaptations by DFSC to the changes in contexts, which have taken place, primarily during the 1990s. It contains a new categorization of activities, namely the five "focal areas" of work: (1) Integrated tree seed programmes, (2) Quality seed to tree planting farmers, (3) Conservation of forest genetic resources for future use, (4) Enhanced use of the diversity of tree species and (5) Outreach.

Due to the change of strategy, the review team has found it necessary – although not necessarily optimal and not always consistent - to divide the following assessment into two parts, namely one focusing on the project period 1995-1999 and thus on the three technical fields (Section 3.2), and another focusing on the 2000 Strategy basically covering the five focal areas (Section 3.3). Naturally, there are major overlaps both in time and subjects between the two sections as e.g. several activities are ongoing during the entire period.

Therefore, the main findings will be summarized in the end of section 3.3. Both sections focus entirely on DFSC research & development activities and overall management. The project support activities are described and assessed separately in Section 3.4.

3.2 DFSC Activities Under the 1995-Strategy

The main activities characterizing the three traditional technical fields are briefly described below. Not all activities are mentioned, only the main ones. The types of activities vary in duration, size, scope, partners and inputs.

- **Gene Conservation**

An important work has been the elaboration of a guidebook 'Conservation and management of forest resources for present and future use – a practical guide'. This will address the issue that, although there is an awareness of the importance of conservation, nevertheless practical experiences and lessons learned have been insufficiently documented, analysed and seldom applied on a larger scale. This specific work started in 1996 in collaboration with participating countries, FAO, KVL and IPGRI, but it builds on work undertaken throughout the period of DFSC existence. Volume 2 was published in 2002 (*in situ* conservation), and it is planned that volumes 1 and 3 will be ready in 2003.

In preparing the guidebook, DFSC has documented outcomes (sometimes jointly with FAO/IPGRI) on the following topics: (i) Planning national programmes for conservation of forest genetic resources; (ii) conservation of genetic resources of teak (*Tectona grandis*) in Thailand; (iii) conservation of genetic resources of *Pinus merkusii* in Thailand; (iv) forest genetic resources conservation and management in managed natural forests and protected areas (*in situ*); (v) conservation plan for genetic resources of Zambezi teak (*Baikiaea plurijuga*); and (vi) people's participation and the role of governments in conservation of forest genetic resources.

Examples of other activities focusing on gene conservation are: (i) National reports on the status of forest genetic resources in 17 countries have been published in co-operation with the recipient countries, FAO, IPGRI, and ICRAF; (ii) Support to the elaboration of Indochina National Conservation Strategies for Laos, Cambodia and Vietnam (through the Indochina Tree Seed Project (ITSP)), with a specific focus on conservation of climax species through identification and conservation of seed sources; (iii) elaboration of a gene conservation strategy for Thailand (through Danced's Forest Genetic Resources Conservation and Management Project); (iv) conduction of a workshop on forest genetic resources conservation, management and utilisation in Thailand, and (v) support to the conduction of a regional workshop in Central America on forest genetic resources.

Generally, these activities respond to the wider priorities identified by projects and institutions with which DFSC works, and are considered to be of high technical quality and are providing important new knowledge for global use. The outcome of this type of field-based activity is important for IPGRI and FAO.

- **Tree improvement**

Species and provenance trials have involved staff since DFSC's inception in the exploration of seed sources, seed collection, distribution, trial design, establishment, assessment, interpretation, dissemination of results and relates to the seed store and library function of

DFSC. The following examples demonstrate the long term, international role that DFSC has been able to play, and possibly could play in the future in this field.

Firstly, the results of the International provenance trials of *Pinus caribaea* and *Pinus oocarpa* established between 1972 - 1974, created a worldwide demand for seed. DFSC collected and supplied seed of the most promising sources during 1981 - 1989 for establishment of seed and conservation stands. The seed was stored at DFSC and in 1993 some was still available for distribution, and help has been provided in assessing *ex situ* conservation stands.

Secondly, DFSC has assessed 20 Teak International Provenance trials. The first assessment was published in 1986, the second in 1995, and the third is currently underway as part of the WAFT Project: Increasing productivity and quality of West African teak plantations using genetic diversity and sustainable management. This project was started in 2002, financed by EU for four years, and includes four partner institutions in France, Côte d'Ivoire, Ghana, and Italy. DFSC is providing inputs involving analysis of trials and selection of plus trees.

Thirdly, DFSC assessed 20 Gmelina International Provenance trials, which have been analysed and summarised in an article for the International Forestry Review.

Fourthly, DFSC had been involved in collection and distributing seed of *Pinus kesiya* and *P. yunnanensis* (as part of the Asian International Pine Provenance Trials). Unused seed has been stored at DFSC for future use in progeny trials. Assessments of 10 *P. kesiya* trials were finalised in 2002, and the results will be summarised on the DFSC website.

Fifthly, part of the FAO project on Genetic Resources of Woody Species in Arid and Semi-arid Areas concerns international species and provenance trials of *Acacia* and *Prosopis*, established between 1984 - 1989. In 1990, DFSC began assessment and is currently completing editing, summarising, and publishing the results of 26 trials, assisted by FAO.

Sixthly, the International Neem Network (INN). In 1992/93, DFSC, FAO, the Forest/Fuelwood Research Programme (F/FRED) and concerned countries, started exploration and seed collection of *Azadirachta indica* for international provenance trials. INN was formed in 1994 to facilitate collaboration and exchange of information. FAO acts as a global co-ordinator and DFSC provides technical support. Both have supported the assessment, analysis and treatment of trials in Tanzania, in collaboration with the National Tree Seed Programme.

These six examples focus on improving quality at the level of provenance selection before moving on to more sophisticated methods – which is correct. However, it is apparent that “improvement” of indigenous species that are less well-known needs to be even more basic i.e. by ensuring the quality of tree seeds, documentation of their location, control of distribution, making users aware of the importance of such improvement and creating incentives for suppliers and users to use source-identified seed. This is where most gains can initially be made for such species, from which farmers could benefit most immediately. This is a point that has been recognized and been taken into account by DFSC.

- **Seed procurement**

The most important and recent example of this activity group is the joint IPGRI/DFSC project on 'Handling and storage of recalcitrant and intermediate tropical forest tree seeds' (See Box 1). Other examples are described below.

Box 1: The IPGRI/DFSC project on handling and storage of recalcitrant and intermediate tropical forest tree seeds

It was initiated by DFSC and the International Plant Genetic Resources Institute (IPGRI) in 1995, funded by Danida, and involves some 50 collaborators in over 20 national institutes and countries in the tropics, with a network of over 500 interested researchers.

The project aims to improve seed handling and storage of high value indigenous tropical trees. Many of these species, especially those from the humid tropics, have seeds that are difficult to store (recalcitrant) because they are damaged by drying out or excessive cooling. This makes it difficult to use the species for tree planting and conservation programmes.

In order to maintain seed viability for as long as possible, the project has been studying aspects of seed physiology, in two phases. In the first phase, a protocol for determining the minimum moisture content and optimal storage conditions was developed and tested on about 30 species. The second phase has concerned additional species, and the practical application of the results have been tested in large-scale trials.

Information about the project is made available on DFSC and IPGRI websites, and a joint newsletter facilitates exchange of information among members of the network. National and regional seminars and workshops have been organised. During the review, IPGRI and KEFRI indicated that this cooperative approach was highly valued by collaborating scientists.

A concluding workshop for the second phase was held in Crete, Sept 2002, when strategic planning for continuing the research work was started. Danida has approved a no-cost extension of the project until mid-2003 to enable the strategy to be completed. After the project ends, the network should remain operational and DFSC plans to continue supporting its activities.

DFSC, together with KVL, has carried out research in genetics and seed handling. Research reports on trials on genetic implications of seed grading, pre-treatment and long-term storage have been prepared and will be published. DFSC has been involved in compiling knowledge about direct seeding of woody species and presenting it in a minor report 'Direct seeding: past, present and future status' - together with a bibliography.

A draft seed testing manual was prepared by DFSC in collaboration with the Laos tree seed programme. Similar manuals are being presented to the Cambodia and Nepal programmes. DFSC has been providing technical backstopping and follow-up on research plans to the three programme seed laboratories.

Information has been collated on practical seed handling, aimed at seed technicians, extension workers and farmers, and elaborated two-page seed leaflets. The choice of species is based on priority lists prepared by collaborating partners and the leaflets are produced with their collaboration. DFSC has also considered to produce two page briefs on 'Valuable, under-utilised species', with emphasis on the production, economy and possible gains of such species.

These activities appear to be addressing relevant constraints in seed procurement. The resultant documentation is focused on the technical level, and more emphasis could be placed on producing material that is more directly suitable for incorporating into extension programmes directed towards field workers / farmers who are involved in seed collection, nursery propagation, and tree planting.

3.3 DFSC Activities Under the Year 2000 Strategy

DFSC work was from year 2000, as mentioned, guided by a new strategy "Challenges and priorities in management of forest genetic resources 2000-2005". Preparation started with a seminar held in Denmark, 1998, on *The Importance of Managing Genetic Resources and Reproductive Material for Sustainable Forest Management*. Some 60 representatives and stakeholders attended from Danish universities, government departments, consulting companies, NGOs and international institutions (FAO, ICRAF, IPGRI), representing mainly technical interests. The seminar conclusions were used by DFSC to draft the strategy.

In the Year 2000 Strategy, DFSC's purpose is confirmed as promoting "tree seed programmes" in developing countries - which, by facilitating tree growing, contribute to improving benefits for the well-being of poor people. According to the strategy, four elements are needed to obtain that, namely the three traditional technical fields, together with a fourth, cross cutting topic concerning institutional development in partial recognition of the wider non-technical issues. The four elements together are referred to as 'Management of genetic resources of trees'.

The Year 2000 Strategy has been in operation for only a couple of years and has not to the present time been implemented to its full intention. Still, this present strategy and the presently ongoing activities are indicative of the profile of the DFSC resources, which are expected to form part of S&L from year 2004. The Annual Work Plans and Progress Reports categorize the activities into two main groups, the Base Programme and the Project Support Program. The Base Program, financed by the core financing from Danida, consists of three sub-categories, Programme Management, Services and Research and Development Activities, where the latter category consists of activities within five focal areas as indicated in Table 1 below. The Project Support Programme consists of project support activities, which are revenue-earning activities.

The present section 3.3 describes the ongoing Base Programme activities and makes a summary assessment of this part of the present DFSC resource profile on this basis. The other part, the Project Support Program, is taken up in section 3.4.

An overview of the activity categories and the respective planned manpower use (in person-months) is given in Table 1 below.

Table 1: DFSC –Expected Manpower Consumption in 2003

	Consumption – Advisers (person – months)	Consumption – Secretariat (person – months)
Base Programme		
Programme Management	38	34
Services	8	
Research & Development	61	
• <i>Integrated tree seed Programme</i>	9.5 18	
• <i>Quality seed to farmers</i>	6	
• <i>Conservation</i>	21.5	
• <i>Diversity</i>	6	
• <i>Outreach</i>		
Sub-total Base Programme	107	34
Project Support Programme	15	
Total	122	34

Source: DFSC Annual Work-plan 2003

• Programme Management and Services

The “Programme management” and “services” categories include base programme management, planning of new activities, library, publications and information, seed bank and seed supply, staff training (including conferences etc.), conduction of training courses and some assistance to the activities under the Project Support Program. The distinction between programme management and services is difficult to ascertain in Work Plans and Progress Reports.

Library services

DFSC’s library - used by staff, visitors, partner institutions and supported projects - is dedicated to texts mainly related to the three technical fields (gene conservation, tree improvement and seed procurement). Documents are registered and new texts are purchased as required. The coverage is comprehensive and probably unique. The library has been a prerequisite for DFSC to perform as a “knowledge centre” in its core competence area of tree seed.

DFSC Publications and Information

Since 1981, the centre has made available publications that are either written and produced directly by DFSC staff, authored jointly with partners or re-printed from existing texts. The large majority have been produced within the last ten years, and document results of studies and project-supported work in the form of books, booklets, case studies, technical notes, research reports, lecture notes, reprints, proceedings and leaflets. A newsletter is now periodically produced. A list of publications is provided in Annex 4.

The topics mainly centre on the three technical fields (many of them are mentioned in Section 3.2), although a few are beginning to cover institutional and social issues in-depth. They are in general clearly written and illustrated, and appear to be well regarded by practitioners,

focusing on the technician level and above. A major, and valuable, work has been the publication of the “Guide to Handling of Tropical and Subtropical Forest Tree Seed” which replaces a previous FAO/DFSC publication.

In general the publications are not written for field worker / farmer level in the context of extension work, since DFSC’s approach has been to provide information from which technical staff can create such extension literature (this point relates to the fifth focal area – outreach – under the base programme and will be further discussed in Section 3.3).

A homepage, currently being updated, gives basic information about DFSC, provides links to important related sites, and allows access and download of some DFSC publications. The site is commendably simple and quick to access and is visited by a high number of people daily. It will benefit greatly from being expanded to cover more of DFSC’s past and present activities. Other web pages are being set up for specific activities.

Seed store

In collaboration with the Tree Improvement Centre, DFSC has continued to provide seed supply and seed bank services (laboratory testing, documentation and dispatch according to requests), mainly for seed that DFSC has been responsible for in the course of international species and provenance trials (cf. Section 3.2). This service is diminishing. Although the seed store services do not directly have an impact on poverty and environment the function has been instrumental in international provenance trials and related seed exchange and supply.

Training

In Denmark, a five-week course “Management of a tree seed centre” has been run every two years at DFSC. As with DFSC publications (which form an important resource), courses appear to have been well appreciated for their technical content, and (in Denmark or regionally), for the opportunity to meet and exchange ideas with new peers. The management course appears ideal for transferring knowledge about personnel management skills and the wider non-technical issues, on which there should be increasing emphasis.

Nevertheless, currently training carried out at DFSC in Denmark is limited, due to lack of funding and demand from self-paying participants. In 2002, no training courses were held (or planned) and in 2003 only a three-weeks combined management and technical course is planned. A technical course has been planned every other year. The first, in 2004, is expected to be on seed laboratory operations.

On-the-job training has been provided in both Denmark or in the country of the trainee, involving all aspects of tree seed centre work, from establishment of seed sources, seed procurement, tree improvement, to conservation of forest genetic resources. In Denmark, arrangements have been made with appropriate institutions, and training has been on topics such as writing scientific papers and technical work (seed collection, seed processing and seed testing). Today, most of the on-the-job training carried out by DFSC is in reality part of the project support programme.

The demand of the present DFSC types of training, therefore, mainly depends on the number of supported (tree seed) projects, which as noted elsewhere most likely will be reduced.

Networks and Partnerships

DFSC staff are in contact and collaborate with peers in a wide range of international, Danish and other national (normally in relation to the support programme) institutions. In some cases

partnerships have been made to formalise collaboration. DFSC has been collaborating – formally and informally – with a high number of institutions (including international centres, research institutes, universities, programmes and projects) in a range of countries (see Annex 5). Mostly, the collaboration has been on scientific topics, but has lately included – through e.g. Petrea - other types of institutions.

The three major collaborating international institutions are FAO, IPGRI and ICRAF (see Box 2), which all expressed general satisfaction regarding the collaboration with DFSC. Both FAO and IPGRI highlighted DFSC’s high academic and scientific level within their specific field of competence. Another observation was the importance of DFSC hands-on experience from the field, which is limited in the two institutions and who therefore to a high extent rely on DFSC. As these activities are often generated from DFSC’s project support activities, it becomes an issue how to continue within this field once the existing projects are phasing out.

Given the need to address socio-economic issues more in-depth (via participatory approaches, forest sector policy review and institutional change) new partnerships with institutions that have extensive experience in such activities (e.g. the UK-based International Institute for Environment and Development) could be very beneficial. Additionally, stronger partnerships with funders/donors who have development experience and governmental linkages could help provide the necessary authority and leverage for change. This would allow DFSC to maintain its “honest broker” role in technical matters, and avoid becoming embroiled in “political” issues.

Box 2: Examples of DFSC collaboration with international institutes

The **Food and Agricultural Organisation (FAO)** has been very supportive of and closely associated with DFSC's work from its beginning as a joint FAO/Danida project, and its work is complementary. FAO's principal mandate is developmental, and the Forestry Department covers all aspects of forestry, including genetic conservation and forest reproductive material. However it does not have field capacity in the technical aspects of seed work. Although requests are received for assistance from countries for upgrading and maintaining tree seed centres, only very specific, emergency situations can be handled and the rest are referred to DFSC. Also, DFSC works in a limited number of countries, whereas FAO is concerned with all UN countries, and as such is able to pass on information and expertise to these countries.

Currently FAO is carrying out several activities in collaboration with DFSC which are complementary e.g. supply and demand of forest seed; publications on tree genetic conservation; national assessments of forest tree genetic diversity; and final assessments of introduction and conservation programmes. There are possibilities for continuing future collaboration with FAO in e.g. the International Neem Network, future studies on *Acacia* and *Prosopis*, summary seed leaflets, and a continuing review of extension material.

The **International Plant Genetic Resources Institute (IPGRI)** aims to help countries (particularly developing) to assess and meet their own plant genetic resource needs; strengthen international collaboration in conservation and use of genetic resources; and develop and disseminate knowledge and technologies relevant to improved conservation and use of plant genetic resources. These objectives correspond to DFSC's with regard to gene conservation but appear to be complementary. Whereas IPGRI is concerned mainly with all plant resources for food and materials, DFSC is focused on tree and forest resources for timber and non-timber forest products.

Currently there are two main activities where IPGRI and DFSC are collaborating, along with FAO and other national or regional institutions, i.e. on elaboration of conservation guidelines and on storage of recalcitrant seed (see Box 1).

The **World Agroforestry Centre (ICRAF)** concentrates on all aspects of agricultural systems that include trees on farms. Its work is of direct relevance to DFSC's own changing strategic emphasis on farmer's needs and multipurpose trees. As with IPGRI and FAO, collaboration with DFSC is highly regarded. Currently there is one DFSC-funded staff member at ICRAF, coordinating the collaborative programme *Improved Seed Supply for Agroforestry in African Countries* (ISSAAC). ICRAF also collaborates in the Petrea project (see Box 3).

• **Research and Development Activities**

In the 2000 strategy, DFSC’s purpose is confirmed as promoting “tree seed programmes” in developing countries - which, by facilitating tree growing, contribute to improving benefits for the well-being of poor people. It indicates an overall shift to a broader focus on e.g.,

multipurpose trees on farms, and encompasses a range of non-technical issues. As mentioned, it contains five “focal areas” of work (with related defined activity groups, see Annex 3 for further details):

Integrated Tree Seed Programmes

The 2000 Strategy emphasizes this first focal area as essential because forest genetic resources play a significant role for tree planting and forest management. As a focal area for DFSC activities, emphasis is on tree seed supply and tree seed programs. Though the strategy document specifies types of activities (such as e.g. baseline studies) and intended beneficiaries (many groups of different stakeholders), it is not specific, either with respect to research needs/proposals or with respect to relations to development activities and countries.

Actual activities in the Annual Work Plan 2003 are support to FAO, ICRAF and IPGRI related to development of regional plans for conservation and sustainable use of forest genetic resources (FAO/IPGRI) and to planning and organization of tree seed supply programs/networks (ICRAF). DFSC contributions to both projects are so far limited, i.e. to preparation, organization and participation in workshops. Through this participation, DFSC is providing its key technical expertise on seed handling and genetic resource management to FAO and ICRAF studies and pilot schemes, i.e. contributing to research and development activities of these organizations. They both provide general (multilateral) development assistance in the form of advisory support to policy and strategy formulations on forestry sector development.

Illustrated by the above mentioned actual activities in 2003, this first focal area of the 2000-Strategy is pointing “backwards” to the key traditional technical fields of DFSC, as it is part of the international network activities under the seed supply perspective. It is also pointing forwards, however, as it is concerned with forest genetic resources in general and agroforestry, i.e. trees for smallholder farmers and not only exotic trees for timber production in large-scale government plantations. The activities under this focal area, and particularly the ISSAAC project, are thus indicating the type of change, which is taking place in the DFSC profile, from the traditional activities towards a broader profile in terms of the species dealt with. The ISSAAC (cf. Box 3) project illustrates that this change could be seen either as a broadening of the traditional service provision (broader coverage of species) or as a project aimed at developing a new element or dimension in the DFSC profile, i.e. to include agroforestry.

Box 3: Two examples of newer more broad-based DFSC initiatives

The *People, Trees and Agriculture in Africa (Petrea)* programme is a collaborative undertaking between DFSC and the Centre National Semences de Forestière (CNSF), Burkina Faso; The University of Sokoine, Tanzania; ICRAF, KVL, Institute of Anthropology, University of Copenhagen, and the University of Roskilde, started in 2001. The development objective is to secure and improve the livelihood of rural people in selected countries in Africa (Tanzania and Burkina Faso) by adding to their agricultural production in a sustainable manner through increased use of trees and shrubs. There are two phases/immediate objectives. The first concerns identification of people's needs and priorities in relation to use of trees in agriculture, and an analysis of constraints and options for improving rural people's benefits from trees. The second concerns development of strategies and locally adapted small-scale techniques for domestication, management and use of these trees. Fieldwork in Burkina Faso and Tanzania was carried out in 2002, and is being written up. The first phase will be completed in 2003. A website, managed by DFSC, gives details (www.petrea.dk). The project appears to be an excellent example of collaboration of institutions and expertise that DFSC will need in the future. The objectives are relevant to the new approach to development. A menu of different technical solutions is being provided (e.g. boundary tree growing), and the farmers' adoption preferences studied. Where scaling up is required, seed may be a constraint, and experience of the ISSAAC project (see below) will be complementary.

The *Improved Seed Supply for Agroforestry in African Countries (ISSAAC)* is a joint ICRAF/DFSC project concerned with developing strategies and policies to scale-up and match agroforestry seed supply with demand in Burkina Faso, Malawi, and Uganda. It started in 2001 and is planned to run to 2010. An inception workshop was held in 2001 and national workshops are being carried out in 2003. DFSC has contributed to field studies in Uganda and Burkina Faso. A web-page describing the activities will also be set up. The project has noted that: some seed centres are being privatised (and unable to perform their public regulatory function); some donors are setting up alternative centralised supplies (that are free); and local, supply systems are cropping up (that are uncontrolled). These developments could compromise efforts to develop sustainable seed supply systems in the future.

Quality tree seeds and plants to tree planting farmers

This focal area emphasizes use of tree seed outside the traditional forestry sector and is thus clearly an area, which could contribute significantly to adding a new element to the DFSC profile.

The area recognises that DFSC should 'move closer to the customers' i.e. basically seeing tree seeds from a livelihood perspective. It relates, *inter alia*, to the "needs, priorities and organisation of farmers" and support to development of extension material.

Within this focal area, the Petrea project (cf. Box 3) is an important specifically designed research project, undertaken in cooperation with a number of outside Danish institutions and key research institutions in the two countries concerned. The project is managed by DFSC, which also provides the major inputs. The project is not a traditional DFSC project, it is not focused on seed at the outset and it is a multi-disciplinary research project. Thus, it is a project, which contributes to adding a new element to the traditional core profile of DFSC. The research undertaken in this project is highly relevant and could have important impact in the longer run in terms of improved livelihood for poor farmers through benefits from trees on their farms.

Examples of other activities within this focal area, focusing on non-technical issues are as follows:

A 'Tree Seed Programme and Rural People' study on the organisation of tree seed programmes (Tanzania and Nepal) was started in 1998, aiming to draw conclusions about the organisation of tree seed programmes and their sustainability and benefits to farmers in Tanzania and Nepal. Case studies for Tanzania have been completed. Though these studies were well-designed and implemented, they have not yet led to DFSC development activities in Tanzania, in spite of the fact that Danida is supporting forestry in Tanzania.

Work is continuing for Nepal, focusing on the activities of the Tree Improvement and Silviculture Component (TISC) of the Natural Resources Management Sector Assistance Programme (NARMSAP). TISC was also supported to develop methodologies for community based marketing at tree seed centres, and an international marketing consultant was contracted (under project support activities) to carry out this activity. The RM has not visited Nepal, but review reports suggest that these DFSC activities are not appropriately designed in institutional terms.

A technical note on collaboration with local communities in tree seed production has been produced in collaboration with Centre National des Semences Forestière (CNSF) in Burkina Faso, and University of Roskilde, and was published in 2003.

Conservation of the forest genetic resources for future use of trees

This third focal area is clearly a continuation of one of the key working areas of DFSC, in which activities have been ongoing for a long time. The technical aspects of conservation are part of the core profile of DFSC, related to seed handling. A number of case studies were carried out in the past and practical guidelines for in situ as well ex situ conservation areas are intended developed on this basis. The important practical guidebook on conservation and management of forest genetic resources, mentioned earlier, is among the ongoing activities under this focal area.

Support has also been given to the PFSV project in Burkina Faso in terms of community-based integration of seed production and gene conservation in 20 villages. The PFSV is a more recent activity and is also an example of support that can be categorized somewhere in the grey border between Project Support and the Base Program.

As part of the Indochina Tree Seed Project (ITSP), which is supported under the DFSC Project Support Programme (see further section 3.4 below), elaboration of three national and a regional conservation strategy is specified as activities under the conservation focal area. These activities provide an example of the difficulties of separating research activities of DFSC from development activities in which DFSC is more or less involved, with providing technical inputs under Danida development assistance financing. Though it may not be too important whether elaboration of conservation strategies count as research or as development assistance, the same activities should not be financed by two sources. In the present case, it is assumed that the DFSC “project”, which is part of the Base Programme and hence financed as research, is a knowledge centre contribution, provided free of charge to the ITSP.

Specific research projects are, however, also ongoing in cooperation with KVL, but under finalization. They have been mentioned above and are concerned with trials on the genetic implications of seed grading, pre-treatment and long-term storage. These are important research activities, which clearly fall under the core profile activities of DFSC. The research reports from the trials are being finalized and the 2000-strategy does not specify any new specific research projects within this focal area.

Enhanced use of the diversity of tree species

This fourth focal area is concerned with promoting use of tree species, which have not so far been optimally used, if at all. Emphasis is on local, often indigenous and multi-purpose tree species. This is a move towards new elements in the DFSC profile in that it is concerned with tree species, which have not been part of the traditional range of species. It is, on the other hand, also an area, which points towards traditional activities of DFSC, as it involves species and provenance trials and related seed handling techniques and procedures.

The activities of this focal area are highly relevant and can be considered both as a broadening of the core profile (wider range of species) and as developments towards adding a new dimension to the traditional core profile, i.e. domestication of wild species.

A number of specific research projects, undertaken in the past under the tree improvement work area, cf. section 3.2, are still ongoing activities. Among these, the research project on recalcitrant tree seeds (see Box 1) illustrates that the diversity focal area of the 2000-Strategy fits in well with the traditional DFSC function. Another ongoing project, the WAFT, is on the other hand an illustration of this focal area as a new “domestication” dimension in the DFSC profile, as it is presently focused on localized species in one country. However, the research activities in WAFT are of the technical, natural science nature (provenance trials), which characterizes the traditional activities of DFSC.

Outreach

The last focal area deals with dissemination of information and delivery of services both to farmer and policy maker levels, requiring very different techniques. DFSC has focused on the mid-technical level in the past. Of particular importance for the future will be the extension (farmer) level. But it also appears that the higher-level policy makers and funding agencies need reminding of the importance of seed supplies.

In its draft communication strategy, DFSC recognises the need to address both levels. At the technical or higher level it identifies traditional target groups (research institutes, universities/colleges, forest departments and tree seed programmes), and also newer targets such as Danida’s sector programs, commercial partners, NGOs and other donors. The strategy argues that communication with the ultimate target group - the farmers - by extension must, for the most part, be done with the help of the national technical target groups, so as to make extension material relevant to the specific context of farmer groups. To promote this, DFSC proposes developing extension “tools” (e.g. model texts, graphics, videos etc) which the technical groups can use to produce the material needed for extension.

Though part of the activities intended under this focal area may be justifiable as knowledge dissemination activities, it does not appear possible to provide farmer extension services from the DFSC offices in Denmark. In order for messages, available in the knowledge base of DFSC, to reach the farmers, local institutions need to be involved and information material need to be very specifically adapted to local conditions. Thus, even if the knowledge available is relevant knowledge in a local context, it is difficult to see how the DFSC “outreach” strategy can have impact, unless it is implemented through a development assistance project, aiming at capacity building of a national extension system.

• **Summary Assessment of Base Program**

It can be difficult, on the basis of the Year 2000 Strategy document and consequent Annual Work Plans and Progress Reports, to obtain a simple and clear understanding of what the basic profile of the DFSC resource base is. The actual activities cover a broad range of types and it is not always clearly transparent what the activities are and how important they are, e.g. in terms of resource use.

The Base Program, described above, contains research activities (adaptive/applied research), a number of service activities (knowledge management, seed storage and networking) and management and administration activities, related to these activities. Development activities, i.e. identification, planning, design and implementation of development and environment

assistance are in principle categorized under the Project Support Programme (section 3.4 below), but the distinction between that part of the overall DFSC programme and the research and development sub-part of the Base Programme is not always clear.

The following overall assessment of the Base Programme by the RM, conceives the actual DFSC activities as providing two main elements to a characterization of the present DFSC profile. The first is the knowledge creation and management functions of DFSC, related to the original purpose and functions in the international context (cf. Chapter 2 and section 3.2 above) and the other is the new research initiatives discussed under the 2000 Strategy in section 3.3, which point towards a broadening of the DFSC profile, compared to the traditional profile.

Core profile activities:

The first element in this profile characterization can be considered the DFSC traditional core profile. It covers the traditional key technical activities, described as the three fields of the 1995-Strategy, i.e. gene conservation, tree improvement and seed procurement. In the 2000 Strategy, these activities are mainly part of Focal Area 3 (Conservation of the forest genetic resources), Focal Area 4 (Enhanced use of the diversity of tree species), and to some extent Focal Area 5 (Outreach). The core profile activities are supported by the “Programme Management” and “Services” categories through e.g., the library services, publications and information, seed store and establishing networks and partnerships.

The “core profile” DFSC activities constitute an important function of DFSC, today as well as in the past. This element of DFSC profile characterize DFSC as a centre of expertise in international provenance trials and related seed handling procedures and techniques of forest tree seeds. DFSC is playing an important international role in creation, management and dissemination of knowledge on forest tree seed handling and genetic resource management. In that sense DFSC is providing an *international public good*.

DFSC has gained extensive knowledge on results of provenance trials and on seed handling. The seed handling expertise relates to all aspects of the “seed supply chain”, i.e. identification and protection of quality seed sources, seed collection, storage, handling, testing, processing, distribution, transport, etc. of forest tree seeds. The role that DFSC has played in describing and disseminating information is providing important support to practitioners in the field around the world. DFSC is internationally acknowledged as a unique centre in the world in this capacity. This was underscored by IPGRI, FAO and ICRAF, by the CTAs in a small survey undertaken by the RM (cf. Annex 7) and generally confirmed also by the fieldwork of RM. Many examples - such as the ‘Guide to Handling of Tropical and Subtropical Forest Tree Seed’ – can be provided. In addition, the DFSC homepage provides important and basic information and is reportedly very well visited. The publications are generally found to be of good quality, although they have been criticised of being too technical and academic, i.e. not written for field workers.

Successive reviews have emphasised that DFSC should not expand its technical fields and maintain its focus on seed supply. The focus on appropriate technology should be maintained, and advanced techniques left to specialist institutes. It might be appropriate to increase technical breadth and cover all types of reproductive material (i.e. vegetative propagation), and include nursery, silvicultural, agroforestry and natural forest management techniques. This is right with regard to its specialized international public good function and to depth of technological sophistication. The issue is how this specialized technical expertise can be used in relation to Danish development and environment assistance.

Recent research activities

The other element of the DFSC Base Programme profile concerns the recent activities, which point towards DFSC adaptation to the changing international context and the strategic changes in Danish development and environment assistance. Thus, it relates to more recent research work like ISSAAC, the Tree Seed Programme and Rural People and, particularly, the Petrea project. In the 2000 Strategy, these activities are mainly within Focal Areas 1 (Integrated tree seed) and 2 (Quality tree seeds).

Aspects of these recent projects point towards a new important category of research activities which entails research on institutional, economic and social aspects of seed supply and even more broadly on the role of trees and forests for rural livelihood. Though these projects are still a minor part of DFSC activities, they are important in that they illustrate new dimensions of the profile, which could add importantly to the traditional, more technical, profile of DFSC.

The Petrea project in particular is farmer oriented and applied action research, which could point towards involvement in development work in the future. The project is characterized by taking the farmer situation, rather than seed, as a starting point. Although it may turn out that seed issues are critical, and there might also be useful contributions in the end from the international public good function, however other factors may turn out to be equally or more important, than those related to seed. It should also be emphasized that the Petrea project illustrates a type of research, which requires an interdisciplinary approach. It is thus a type of research, which is quite different from the research undertaken in relation to DFSC's core profile as described above.

A resource base with a broader profile is clearly necessary for future Danish development and environment assistance. The core competence of DFSC is a relevant part of this, but only a part. Therefore DFSC must either change the composition of its present staff to include more social science expertise or it must become part of a larger institutional set-up, where such a more appropriate composition exists or can be built up.

3.4 Project Support Activities

During the last ten years, DFSC has provided support to 15 external, donor-funded development assistance projects and programmes. Activities related to these have formed an important part of DFSC's overall work programme and they contribute to characterizing the profile of DFSC.

The following are development and environment assistance projects that have received or are currently receiving support from DFSC over the period 1993 – 2003. Some notes on each are found in Annex 6.

PROJECT NAME	93	94	95	96	97	98	99	00	01	02	03
DANIDA (and predecessor) PROJECTS											
Tanzania: Tree Seed Project (started 1989)	*	*	*	*	*	*	*	*			
Nepal: Tree Improvement Project (started 1990)	*	*	*	*	*	*					
Nepal: NARMSAP Tree Improvement and Silviculture Component (TISC)						*	*	*	*	*	*
Nicaragua: Tree Improvement and Seed Centre, PROSEFOR, Central American Tree Seed Network	*	*	*	*	*	*					
Eritrea: Tree Seed Project				*	*	*	*	*	*	*	
Burkina Faso: Seed and Conservation Project						*	*	*	*	*	*
Indochina Tree Seed Programme (Cambodia, Laos, Vietnam)						*	*	*	*	*	*
Indonesia: Tree Seed Source Development Project (TSSDP)	*	*	*	*	*						
Indonesia: Forest Seed Project						*	*	*	*	*	*
DANCED PROJECT											
Thailand: FORGENMAP					*	*	*	*	*	*	
OTHER DONOR PROJECTS											
Sudan: Tree Seed Project (UNSO)	*	*	*	*							
Djibouti: Tree Seed Project (UNSO)	*	*	*								
Ethiopia: Tree Seed Project, (UNSO)	*	*	*	*	*						
Uganda: Tree Seed Project, UNDP/NORAD							*	*	*	*	

Of the ten Danida funded projects, three are presently active, i.e. the projects in Nepal, Indonesia and Indochina.

It is difficult to fully assess the involvement of DFSC in the above field projects. As an institution, the involvement of DFSC is limited and the activities specified in the Work Plans and the Progress Reports hence only give a partial picture. It is the involvement of present and former DFSC staff and the more or less formal relations they establish with the projects and local partners that make the projects important for a characterization of the DFSC profile and staff resources. Taking the Indochina project as an example, project formulation was done by a former DFSC employee and the CTA was until lately a DFSC staff on leave. Similar staff involvements characterize the now terminated Tanzania project as well as the much later project in Indonesia. Many short-term consultancies to the projects are by DFSC staff and, in fact, almost all the field experience of the present DFSC staff is from technical assistance and short-term consultancy assignments to these projects. The services are provided by the staff, either in their personal capacities or as DFSC consultants. Only in the latter case are the activities visible as DFSC “project support” activities.

- **The Research and Development Linkage**

The projects should be seen as having an important role for the inter-linkages of the research and the development activities of DFSC. Especially in the past, there has been a close relation between the (applied) research activities and the development activities, i.e. project planning, design and implementation activities of (the staff of) DFSC related to these projects. And the relation goes both ways.

Applied research activities, species and provenance trials, for fast growing and high-value exotic tree species, were initial activities of DFSC. They laid the foundation for the knowledge basis, which exists today and to which ongoing research activities, such as the

Neem and the recalcitrant seed projects, add further information. The early research activities related to gene conservation, tree improvement and seed procurement all contributed to establishment of this knowledge basis, which was very valuable for the large-scale government reforestation programmes in the 60s and 70s.

This early research of DFSC therefore also became an important basis for Danish support to reforestation development assistance from the 80s and up through the 90s. The aim of this assistance was to increase the supply of quality tree seeds for reforestation, attached to the said government programs. With these projects established, DFSC got platforms for further awareness raising and for establishing the institutional partnerships and contacts that comprise part of the international network within which DFSC is today providing what is called a public good function in section 3.3 above.

There was also a feedback from the projects to the research activities. They were the basis for identifying topics for research and they provided opportunities for the fieldwork part of research projects, e.g. for field trials. These opportunities have made DFSC important for the international organizations, FAO, IPGRI and ICRAF, because they gave them access to participate in and gain from fieldwork. In this sense the field projects have been rather essential for establishment of the research network and the knowledge basis, which exist today.

With the changes in “demand”, particularly during the 90s, i.e. in the requirements for forestry expertise related to development and environment assistance this knowledge basis of DFSC is becoming insufficient to cover the needs from the point of view of Danish development and environment assistance. The technical knowledge of DFSC is still relevant and e.g. the Neem and the recalcitrant seeds research projects, mentioned above, show that new challenges are still coming up within the traditional public good function of DFSC. Thus, the core competences of DFSC are still relevant, but they need to be supplemented with and integrated into a broader approach. The recent research initiatives, which DFSC has undertaken, are pointing in new directions, but the “project support” activities are determined by the design of the ongoing projects.

For DFSC to maintain the essential inter-linkages between research and development activities or to be able to undertake research- or knowledge-based, relevant development activities, DFSC needs to re-consider its strategy. DFSC needs to consider both which research projects could be relevant in relation to ongoing projects and which relevant project/programme support activities might follow from ongoing and new research projects.

- **Field Project Design and Relevance**

The overall objective of the field projects is generally to increase the supply of quality seeds. This was e.g. the case with the Tanzania project, which was one of the earlier tree seed projects. A more recent project, the Indochina project, has the objective more specifically formulated as “upgrading the production, supply, and correct use of physiologically sound and genetically well-adapted and improved planting material for tree planting activities in the country/region”. In the case of Vietnam, as part of the Indochina project, this overall objective is to be achieved through: a) institution-building, b) education and training, c) seed technology improvement and d) gene conservation.

This focus on the supply of improved propagated planting is relevant today in Vietnam as there is a lack of this in relation to the large government reforestation programs, which are

supported also by external donors such as KfW and World Bank. A similar justification can be given for the Tanzania project at the time that this project was designed (in the late 80s). It was in this respect well designed in relation to the contextual situation in Tanzania at the time. Generally, the tree seed projects have provided needed and qualified technical inputs to specific government agencies that in the respective countries were responsible for the supply of seeds to government replanting programs.

Three important changes have taken place up through the 90s, which have changed the contextual background for the tree seed projects in most countries. Firstly, forestry development has become much more than development of government plantations and forestry reserves for timber production. Forests and trees are today conceived also in their role for providing non-timber/non-wood products and for income generation opportunities for smallholder farmers as well as in the environmentally protective, natural resource management, role. Secondly, privatisation efforts have changed the role of government vis-à-vis the private sector. Thirdly, most governments have de-centralized or are in the process of doing it. Thus, government responsibility is no longer vested in one national “seed supply” agency and with the privatisation efforts this responsibility has also changed character. These changes have decisive implications for the appropriate design of development and environment assistance. The later tree seed projects, particularly the Indochina project, have to some extent taken this into account, but even the Indochina project is still designed and implemented, at least initially, on the basis of an incomplete institutional understanding.

Another issue, which indicates insufficient institutional understanding in the design, relates to project organization. The earlier field projects, in an effort to achieve their technical objectives as quickly as possible, tended to set up centralized project structures, parallel to the existing government system. This was clearly the case in the Tanzania project, but also the ongoing project in Indonesia is designed with a parallel project organization, physically located outside the relevant government agency and “attached” to this agency, which is focused on seed supply. The Indochina project is designed as a more “within” type of institutional support, but again with narrow focus on the agency (state enterprise), which is responsible for seed supply to government replanting programs. Newer initiatives, setting up of pilot schemes, are giving much more emphasis to institutional issues, but very late in the lifetime of the project.

Though the projects are not the responsibility of DFSC as an institution, they are essential for the inter-linkage between research and development activities of DFSC and DFSC staff experience is almost entirely from these projects, as mentioned above. The following section gives a further assessment of the field projects in Tanzania and Vietnam based on the RM field visits to these two countries. Answers to a small CTA questionnaire to present Danida CTAs in agricultural SPSs (see Annex 7) have also been used. The emphasis is on the Vietnam project as this is the most recent and still ongoing and hence most indicative of the present DFSC profile.

- **Impact of Field Projects**

- Training and Awareness Raising

- The fieldwork in Vietnam and Tanzania demonstrated that the main impact of the field projects is training and awareness raising of the central governmental tree seed institutions and its regional branches. In the case of Vietnam, more than 600 participants have been trained in country in the period 1999-2002. In addition, several staff members have participated in regional and overseas training events.

On the one hand, the high number of training events is a remarkable result. There is little doubt that the projects have contributed to an increased awareness of the importance of using quality seeds. This increased awareness is first of all embedded in the staff, which has received training.

On the other hand, however, the training has some limitations. Firstly – with Vietnam as an example - the focus of the courses has mostly been on technical matters (such as forest tree collection and procurement) and only to a limited extent (and only lately) on social and institutional aspects. Secondly, the participants have mainly been from the national Central Tree Seed Company (CFSC) and its regional branches and again only limited (and lately) from other province and district representatives, such as the provincial branches of the Ministry of Agriculture. As a consequence of the first two observations, and due to the fact that the training generally has not been of the Training of Trainers type, it is doubtful whether the regional staff is able to effectively train other staff and stakeholders in their regions. The changed focus of the project to start to decentralise (through pilot projects) the activities is therefore very relevant.

The issue of “reaching the ultimate beneficiaries, the tree planters/farmers” is central to meet the ultimate goals and relates to decentralisation and collaboration with the extensions system and other donor programmes and to the extension “message”. There has, however, in general been limited involvement of the extension systems, though some involvement of extension workers was found in the two pilot provinces in Vietnam. However, publication material has only to a limited extent been translated to Vietnamese and modified to suit the needs of farmers. In Cambodia, though, the project seems to have progressed more in terms of elaborating field based extension material. In Tanzania there is little influence on the agricultural extension system, though this is the system, which is closest to the tree planting farmers.

Institutional Capacity Building

With respect to impact in terms of institutional capacity building, questions about the aim and strategy of the projects can be raised. Firstly, the “strict” focus on the centralized national level does not seem optimal. This is especially the case in Tanzania, but also in Vietnam, where attempts to decentralize started very late in the project period and only through pilot projects on suppliers network and consultancies on regulatory framework. Whereas the approach of starting pilot projects probably is the right one in a centrally controlled society as the Vietnamese, it can be argued that these pilot projects should have started from the outset of the project. This would have created a better understanding of the complex institutional context at province and district levels, an understanding that the project is only beginning to obtain now, at the end of the project.

Institutional issues like disincentives, decentralization to local authorities, the role of the private sector and the influence of the regulatory framework need to be understood to be able to move the barriers to provide a supply of quality seeds to the tree planters and through this improve their livelihood. An overview of these issues needs to be in place relatively early in the project cycle in order to be able to change the situation. However, in Tanzania it was basically not considered and in Vietnam, the project is only starting to get it now. An initial institutional study of the forest seed network was carried out by DFSC in 1999 (with no major follow-up from the project). More insight was gained with the conduction of DFSC consultancies (e.g. on ‘Provincial and Regional Tree Seed Networks and Supply Systems’ (late 2001 and late 2002) and ‘Pilot Tree Seed Supply Systems for Practical Implementation’ (March 2002)) and subsequent start of the pilot projects.

In Tanzania, the tree seed project established a new institution (both institutionally and physically), the national tree seed centre. Seed expertise for the new centre was transferred from the existing forestry research institute, which was and still is responsible for forestry research, including on tree seeds. Today, the centre is “privatised” as a seed trading company, expected to operate on a commercial basis in competition with other seed dealers. The company does not have mandates, either for seed research or for national quality control of the tree seed sector. Neither does the company have special mandates related to national forestry policies and strategies.

Seed Supply to Reforestation

There is no doubt that the projects have contributed to increasing the availability of quality seeds, which is a clear and positive impact. In Vietnam, regional workshops with participation of major stakeholders were conducted to identify priority species and set future priorities. This has a positive effect on the awareness raising of the persons involved. Also, the project seems to have been able to upgrade the work in seed source identification and registration.

The technical approach on focusing strictly on tree seeds, as described in the strategy, project documents and commented on in the review reports, has been followed. In that sense the projects cannot be criticized. Nevertheless, there seems to be (or has been) scope for changing the technical approaches – which now also appears to be the opinion of DFSC.

Firstly, the project has focused on ensuring high quality seeds with (technical) activities like tree improvement (e.g. seed orchards establishment). The main problem, however, appears to be to ensure low-level seed source improvement, i.e. avoiding that the tree planters use low quality seed, but instead seed of an average quality. This would increase production and survival rates significantly.

Secondly, seed might not be the most important type of reproductive material. In Vietnam, for the production forest areas (rather than protection forest areas), vegetative propagation (tissue culture, cutting and grafting) is used much more than seeds and some seed production enterprises have taken up seed production again only because the project network in the pilot provinces is dealing only with seeds. Furthermore, the nurseries are important in the production cycle. There are not enough of them and they can often only exist, if part of the planned network for supplying the Government programmes with seedlings. If the project was focusing not only on seeds, but also on seedling and plants, the different propagation techniques could be included. This would have made a better link to the ultimate aim of the project, as this would have involved a more coherent strategic thinking and planning of the project in relation to ultimate objectives.

Thirdly, but not least importantly, the provincial pilot projects could be developed as “model”-trials for how local governments might be externally supported to strengthen both the “market mechanisms” and the government regulatory functions. This would point towards establishing an efficient quality seed supply chain, which could also reach tree planting farmers.

• **DFSC Backstopping to Projects**

The field projects have had a backstopping agreement with DFSC to deliver short-term TA consultancies. In the case of the Indochina project, the project document specifies that DFSC is to manage the 24 man-months of inputs. The “CTA-survey” (cf. Annex 7) on the one hand recognises the consultancy work to be generally good and even often of very high quality. It is

also noted that DFSC maintains good communication, free of costs after the completion of assignments. On the other hand, the consultancies are criticised in some cases for being carried out by “consultants who are too inexperienced, or lacking a development dimension, or too academic or, a mixture of all” and for being predetermined and not prioritised according to local needs.

In Vietnam, the staff generally appreciated the consultancies. Some of the recent consultancies from DFSC have made important contributions towards establishing a basis for more institutional capacity building at the decentralized level. These took place, as noted elsewhere, late in the span of the project, which makes it uncertain whether the project will benefit from them before it ends.

In Nepal, DFSC has been delivered ad-hoc services and separate six consultancies to the Tree Improvement and Silviculture Component (TISC) within the Danida Natural Resource Management Sector Assistance Programme (NARMSAP). The January 2003 Annual Sector Review (ASR) noted that DFSC is a relevant partner for TISC but that services provided should be specifically related to TISC work plans with the aim of providing assistance to service providers. In addition, it was noted that there was a tendency that DFSC drives the agenda for TISC, which is no longer needed because NARMSAP had hired well-qualified local staff to work with TISC. The ASR concluded that DFSC should focus on technical inputs, where the present DFSC expertise is, rather than as recommended by DFSC to be involved in the development of strategies for TISC.

4. INSTITUTIONAL ISSUES

4.1 Organisation

- **The Future S&L Centre**

The S&L Centre will be a merger of three individual institutions KVL, FSL and the Forestry School. Its formal establishment is in progress, but not yet completed. The “Skov & Landskab - Yderligere Integration” document (December 2002) describes the present stage of the merging process, and Annex 2 of that document outlines the expected organisational set-up.

The S&L Centre is to become part of the KVL organisational structures, which implies that it institutionally will be attached to the Ministry of Science, Technology and Development. The Rector of KVL becomes responsible to the Ministry.

A Management Board responsible for the overall management of S&L will be set-up. It will consist of four internal and seven external members, hereunder representatives from the Ministries of Environment and Education and the Private Sector. The Director of S&L functions as the secretary of the Board. It is envisaged that four yearly meetings will be held.

A Board of Directors will consist of one Director and three Vice-directors. The Director is the manager of S&L, and the Vice-directors will have individually defined responsibilities for development and management of S&L. A Management Group, consisting of the Board of Directors and the Managers of the Departments, will meet every month.

The S&L centre will consist of eight departments of which the first one relates to education and training and the other seven to research within different areas. For DFSC, the two most important departments relate to ‘Gene conservation of plants’ and ‘Economics, policy and management’. Each department will in principle have its own Managers, appointed by the Board of Directors and recruited internally.

In addition, a number of permanent and ad-hoc committees will be established to advise on needs within e.g. research and development, and education. One of these is the Scientific Advisory Council, which will focus on the scientific issues.

It is envisaged that the Management Board is in place soon, and that the Board will recruit the Director by August or September, after which the remaining directors shortly will be identified and recruited.

- **DFSC Present Organisation**

DFSC is a non-profit institution, financed partly through a core funding from the Danish development assistance allocation on the State Budget and partly through earnings from sales of services, primarily consultancy services to Danida financed projects and programmes (the forest tree seed centre projects). It functions as a sector research institute under the Ministry of Foreign Affairs (MFA), which is heading the Board of Directors of the institute.

The core funding is channelled through the Ministry of Foreign Affairs to the Ministry of Energy and Environment (MEE), which is the administratively and financially responsible ministry. DFSC takes care of all accounting, on behalf of and under the responsibility to MEE. An agreement between MFA and MEE regulates the functions and responsibilities of

MEE concerning the operations and financing of DFSC. This agreement was terminated with effect from January 1, 2004.

DFSC is physically located on the premises of the Danish Forest and Nature Agency (DFNA) of MEE, which is also the agency administrating DFSC on behalf of MEE. DFSC pays rents for offices and for administrative services (salary payments, withholding taxes, etc.) from the Danish Forest and Nature Agency. All staff is formally employed by the Agency (MEE), but salaries as well as other expenditures of DFSC are all financed through the core financing from MFA and the cost recovery earnings of DFSC.

A Board of Directors, with representatives from MFA and DFNA and with MFA chairmanship, is established. It discusses and approves work plans, progress reports and budgets/accounts. In addition there is a Technical Advisory Committee, which is focused primarily on the professional activities of DFSC and has an advisory role only.

The staffs of 14 persons fall in two groups. There are 10 fulltime technical or scientific staff at present and four administrative staff, who are all employed on a part-time basis. There is no formal organisational structure dividing the staff into sections or other organisational groupings. The staff works either individually or together in groups established on an ad hoc basis around research projects and other activities.

One staff group is concerned with what in Chapter 3 is termed the core profile or public good activities of DFSC. One technical and one administrative staff are more or less on a fulltime basis undertaking the current activities related to this function, i.e. managing the knowledge creation, information dissemination and technical services functions, including operation of the seed bank. Other staff also participates in this group, as required by specific research or other activity types related to this function. Thus, six technical staff (including management) is involved in the recalcitrant seed research project, mentioned in Box 2 in Chapter 3. Similarly, several technical staff is involved in provision of services to partners in the DFSC network, in producing leaflets and in other "outreach" activities, like workshops, etc.

Groups are also established around the recent new research initiatives, exemplified with the PETREA project. Six staff members (including management) are involved in this project from DFSC (in addition to the work input from staff of outside institutions). Of these six staff, one has a much larger input than the others and acts as "team leader", with DFSC taking the main responsibility for implementing this research project.

A third grouping could be identified as a management group. This group consists of the present (half-time) Director, the Deputy Director and the former Acting Director. This group shares management responsibilities in relation to the work of other groups and of the administrative personnel, it is the key group in relation to the project support activities and it undertakes key administrative functions, such as drafting work plans and progress reports. Other staff participates in some of these functions. Thus, one staff is presently using a considerable part of his time on "outreach" functions, which are partly management activities related to "marketing" of DFSC services and partly functions, which relate primarily to the core profile function of DFSC. In developing the recent new strategy, other staff did also participate.

- **Options for Integration**

In principle there are three options for integrating the staff of DFSC into S&L:

- maintaining DFSC staff as one group and making it an additional section/department in the planned S&L organisational structure
- maintaining DFSC staff as one group, making it a sub-group in one of the planned departments of S&L, and
- integrate DFSC staff into two or more of the planned departments in S&L

Maintaining DFSC staff as one group has the advantage of maintaining the "group spirit", which does characterise DFSC at present. DFSC does also consider it the best solution for maintaining the DFSC core profile internationally and for ensuring a clear profile of international development work within the new centre. It may on the other hand make it more difficult to realise synergy effects with other staff groups, if DFSC staff is transferred as one group with the overall responsibility, as a group, for the international development profile of the new centre, i.e. in reality as a new "development" department of S&L. It will most likely also be unacceptable to the other parties of the merger.

Transferring all staff of DFSC into one of the planned departments also has the disadvantage of making it less easy to realise synergy effects, as this department would tend to dominate the development programme as a department. This would constrain efforts to establish a development program, which cuts across the various departments and maximises the scope for realising synergy effects

As mentioned, two of the planned S&L departments are immediately relevant for realising synergy effects and hence for contributions to a development program, which cuts across the departmental base organisation of S&L. The 'Gene conservation of plants' department would seem perfect for "housing" the core profile activities of DFSC and hence for providing the services of this international public good function in the future. Though a number of the present staff is involved to some extent, it is not and does not need to be the whole present staff who is transferred in order to maintain, consolidate and further develop this particular function. The present DFSC staff involved, and interested, in the new types of research, exemplified by the PETREA project could contribute importantly to draw the planned 'Economy, policy and planning' department of S&L into research work, relevant for development and environment assistance and hence contribute to the development of an interdisciplinary group, which in the longer run would be able to provide planning, design and implementation activities to Danish projects and programmes within natural resource management.

In the judgment of the RM, splitting up the present DFSC staff into two groups and integrating these two groups into the two mentioned departments of S&L would realise a major part of the presently existing synergy potential and create a good basis in these two groups for further developing the resource base in clearly relevant directions, seen from the perspective of likely future demands for Danish expertise in relation to natural resource management in Danish and international assistance to developing countries.

4.2 Management

- **Management Structure in S&L**

As mentioned, the daily management of S&L is the responsibility of the Director (and the three Vice-directors), who in turn reports to the Management Board. Their tasks include development and management of S&L contract with KVL, working programmes, budgetary management, accounting and administration.

The appointed department managers will have the responsibility of managing the departments' working programme, human resources, budgets and accounting. An important task also becomes to coordinate with the other departments.

The S&L centre is the first attempt in Denmark to create a fusion between a university, a sector research institution and a business oriented teaching institution. It is a mix of project organisations, which traditionally has organised the work from project to project (especially FSL) and organisations with more permanent activities (such as education at KVL and the Forestry School). It is envisaged that in the future there will be a common and permanent base structure with room for both types. All activities including projects will be attached to one of the departments. This implies that the departments will manage and control the related budget.

In order to seek integration and synergy between the departments, crosscutting and "self sustained" working groups will be formed around a crosscutting topic, common lessons learnt or specific projects. One suggested topic is 'International collaboration and project work' which also includes development assistance projects. The "self sustained" working groups will be attached to one department, which therefore also will be responsible for the management of the related budget.

- **Present DFSC Management**

Management is the responsibility of the Director (employed on a half-time basis only, the other half time being with the Tree Improvement Centre of the Forest and Nature Conservation Agency), assisted by the Deputy Director.

The present Deputy Director has recently returned to DFSC after 4 ½ years of leave of absence for a position as advisor to a forest tree seed centre project in Indonesia. During this period a senior researcher was appointed Deputy Director. The present (half-time) Director has been the Director for a number of years, but returned April 1st, 2003 to this position again after a period of 2 years leave of absence for a position as Team Leader of a Danida financed forest tree seed project in Indochina (Vietnam, Laos and Cambodia). The senior researcher has thus been functioning as Deputy Director for more than two years and after that as Director for the last two years. All three are now back into their original positions and are for the purpose of this study taken as the "Management" of DFSC.

Management is much focused on the administrative/financial issues, whereas the "professional management" to a large extent is self-management in small project groups. Management does, however, play a major co-ordinating and decision-making role in relation to the establishment of strategies, work plans and budgetary allocations, as well as in progress reporting.

Work planning at DFSC takes the form of a strategic plan, which "revolves" in annual work plans. Management in accordance with the strategy and the annual work plans is, as mentioned, to a large degree self-management, but key strategic decisions concerning DFSC are taken by management. The Annual Progress Report is also produced by management and it describes the actual activities undertaken and results obtained during the year.

It is, however, somewhat difficult to clearly see what the key activities are in reality and to follow up on actual performance in use of human resources, budgets and the corresponding results. It is in particular difficult to see clearly the amount of technical staff resources used for administrative and management functions as compared to the professional/technical activities of the centre.

- **Management Issues of Integration**

Maintaining DFSC as one group is, as mentioned above, not necessary for maintaining the "international public good" service, which is a core activity of DFSC today. This function could be continued with part of DFSC becoming part of the 'Gene conservation of plants' department planned for the new centre. The remaining part of DFSC could also realize major synergy effects, i.e. with another planned department, the 'Economy, policy and planning' department, but there are also important inter-linkages between these two, and possibly other, departments

It is therefore essential for realizing the overall synergy effects that the new centre establishes a major, comprehensive and coherent "International Research and Development Program". It is not enough with a cross cutting working group related to development issues. The programme should contain the international and development activities of all departments working with international and development issues in their respective departments. The international programme organization (cutting across departments) and the base organization (departments) will then constitute an overall matrix organization.

In this context it should also be pointed out that there continues to be important Danish institutions outside the new centre. The aim should therefore be to establish a "network" of institutions/persons, which are behind the international program, contributing to it in one way or another (cf. e.g. the "Poultry Network") and thus being part of the programme together with the departments of S&L, which have international activities.

The departments of S&L will require management functions related to the work of the departments, which include work in Denmark and with Danish subject matters as well as the international activities. All international activities should, however, be established as a coherent programme across the departments. There is thus a need for management of the programme in addition to department management functions and responsibilities.

There is a need for an "International Programme Manager", who will have the overall responsibility for the international program. She/he should have authority at the same level as department managers (including financial management), have the day-to-day management responsibilities and have direct access to the vice director responsible for the international program. This management position shall plan and manage implementation of the programme in cooperation with the respective department managers on contributions (activities, personnel and funding) of the departments to the international programme as well as with outside institutions participating in the network.

The "International Programme Manager" shall work exclusively on research and development activities, related to developing countries and be directly involved in the programme activities and shall have the financial control of the funds of the program, including authority to establish internal agreements with departments and external contracts with external parties participating in the program.

In order to give the international programme sufficient weight in the new centre, it is also suggested that one of the vice directors be recruited on the basis of qualifications related to research and development activities relevant for future Danish assistance in the areas of natural resource management. He/she shall thus have a development background and experience from working in and with developing countries. This is considered essential in order to ensure that the development aspects of the new centre is given a sufficiently high profile to maintain the activities and resource base, which are important for Danida and into which a considerable amount of development funding has gone in the past.

It is a clear interest of MFA to ensure this profile and MFA could, as a user of the services of S&L be represented in the Management Board. S & L is a public institution with the final responsibility vested in the Ministry of Science.

4.3 Staffing

- **Staffing Policy in the New Centre**

An internal personnel policy manual is still too be elaborated. A working group with representatives from the three institutions has been established with the mandate to facilitate the process of elaborating S&L policy on personnel.

The "Yderligere Integration" document specifies that the employment conditions of the present staff will not be changed, and that each individual technical or administrative staff will be able to choose (with guidance from the management), which department they want to be transferred to.

- **Transferring DFSC Staff**

It is assumed that all present DFSC staff, both technical and administrative, as a start will be transferred with job descriptions identical to their present ones. This implies that the technical personnel will continue to undertake research activities, which are applied rather than basic research, and activities related to design and implementation of development and environment assistance projects and programs. However, on the other hand, it is important that the DFSC staff is flexible to the changed demands in the new setting, such as participating in the education programmes and in the process of identifying and establishing the new activities in the international programme.

It is a good principle that the staff themselves can decide which department they belong to. The principle should also apply to the DFSC staff, as this will create most synergy with S&L. This implies that the DFSC group will not continue as one group but be divided according to individual competencies, i.e. probably into the 'Gene conservation of plants' and 'Economy, policy and management' departments.

It is essential that the "bridging" of basic research with actual applications in development work be ensured in the new set-up in accordance with the past and present work of DFSC. The research work shall thus be relevant for the Danish assistance.

The considerable experience of the administrative staff of DFSC for working with developing countries and with development assistance could be utilized by attaching an "international secretariat" to the international programme manager, who will be responsible for the international work of all staff of all the departments. Administrative staff will also need to be attached to the "international public good" function.

4.4 Funding

- **DFSC 2003 Budget and Future Funding Requirements**

The overall budget of DFSC is split into two categories, corresponding to the categorisation into the two main categories, i.e. Base Programme and Project Support Program. The latter comprises revenues from sales of services (to projects) and the expenditures relate to the cost of providing the services, i.e. staff salaries, other salary expenses and travel costs. Net earnings from this part of the overall budget enters an "accumulated overheads" account of net earnings, which DFSC can use at their own discretion. Net drawings from the "accumulated overhead" account enter the Base Programme part of the overall account.

Total budgeted expenditures on the Base Programme account for 2003 was as follows:

Staff salaries	DKK 5.2 million
Operational (activity/project) costs	DKK 1.9 million
Office expenditures	DKK 1.4 million
<u>Total</u>	<u>DKK 8.5 million</u>

Revenues are estimated as:

State Budget	DKK 6.0 million
External Research Project Funding	DKK 1.2 million
Sales of (consultancy) Services	DKK 0.5 million
<u>Transfer from "accumulated overheads"</u>	<u>DKK 0.8 million</u>
<u>Total</u>	<u>DKK 8.5 million</u>

Assuming unchanged activities of the DFSC staff transferred to S&L, the funding requirements should basically remain the same for this part of the future staff and related activities.

At the TAC meeting, DFSC presented a proposal for "Work Plan 2004 and Activity Implementation Schedule 2003-7" (cf. Annex 8). Roughly, DKK 2.2 millions are set aside for programme management, DKK 1.3 millions for public service facility and around DKK 2 millions for support to the existing research and development program. In addition, DKK 640.000 is earmarked (hopefully together with similar funds from the other institutions) for

development of the new joint program. The present contractual and other commitments of DFSC related to ongoing research projects, like PETREA, ISSAAC and WAFT and other activities will be gradually phased out in 2004-5. Assuming a continued core funding of DKK 6 million annually, this implies that "free" funds will be made available in 2005 (around DKK 950.000) and subsequent years (around DKK 2.4 millions). However, further savings could be imagined on management and administration expenses as some economies of scale on such items should be realised through the integration of DFSC into a much larger institution.

The external project funding will continue over the coming 1-2 years and some revenues from sales of consultancy services by present DFSC staff can also be expected to continue in the new set-up. The possibility for drawing upon the "accumulated overhead" accounts is, however, limited in the future as the balance on this account is down to less than 0.2 million by the end of 2003. Even so, it should basically be possible to transfer all present DFSC staff to S&L and to maintain the present activities without burdening the S&L budget, if the future performance contract funding can be maintained at the present level of DFSC core funding.

- **Future Performance Contract and Other Funding**

The future performance contract will be between MFA and S&L and it is assumed that the total amount will remain roughly the same as the present core funding to DFSC. Funds cannot, however, be earmarked for "DFSC activities" in the future. The present DFSC activities can, and some of them should, be carried over and the performance contract should cover these costs. The contract shall hence specify these activities together with estimates of the costs involved, as further described in Chapter 6 below.

It is suggested above that the core profile activities should be continued in the future and it is assumed that the integration into S & L will give basis for a strengthening and possibly expansion of activities. Part of this will be done by staff of the other institutions joining S&L and be financed from their existing funding sources. The costs (including salary costs) of the activities carried over, i.e. those undertaken by part of the DFSC staff resources transferred shall also be covered by the performance contract.

Also, the research projects, to which DFSC is committed, should be carried over and continued until they are finished. The activities in these projects shall continue to be by those present DFSC staff, who are presently involved and the performance contract should cover the expenses for which DFSC is committed, including the salary costs.

Not all activities, as they have presently been planned by DFSC for 2004 shall, however, necessarily be carried over. Part of the activities are not related to commitments to outside parties and can, of course, be changed in accordance with new requirements in the S&L work program. In order for the performance contract to contain activities leading up to a total funding of DKK 6 million per annum, these new activities, for which part of the present DFSC resources are to be used, must be specified, costs estimated and be included in the proposed performance contract. Funds should be earmarked for the implementation of the 'International Research and Development Programme'.

It shall also be emphasised that a new work programme along the lines suggested in the present report, will necessitate inputs from resources outside S&L, i.e. from entities of the network and their financing should also be part of the performance contract.

It is in this context essential that S&L include consultancy activities on a fee earning basis in the international program, which can provide financing additional to the financing from the performance contract, or ensures financing of such external inputs from other sources.

5. S&L RESOURCES

5.1 DFSC Present Staffing

- **Overview**

DFSC's present human resource base consists of 10 permanent technical/scientific staff and four permanent administrative staff. Not all are fulltime and some of the project support activities are expected to be undertaken by external short-term consultants. Of the 10 technical staff, one is on a temporary employment basis.

The total number of person/months entering the 2003 work programme is 122 for the permanent technical staff and 34 for the administrative staff (cf. Table 1 in section 3.3). Eight person/months of project support consultancies is planned provided through external consultants.

- **Training Background and General Work Experience**

Of the 10 technical staff, six have a university training background in forestry. Of the remaining four, two have a botany/biology university background, one is an agronomist and one is a political scientist. Five of the 10 permanent technical staff have a Ph.D (in forestry, botany and political science). The balance of staff training background is heavily biased towards the natural sciences versus the social sciences.

Of the six foresters, one is from the early 70s, three from the early 80s, one from the early 90s and one from the late 90s. The two biologist/botany staff are from the early 90s and the agronomist and the political scientist are from the late 90s.

Of the foresters with some 20 years of experience, all have worked with forestry in a Danish context and all have some experience from international cooperation on tropical forestry, including through FAO employment as APOs or in more senior positions.

The recently employed foresters have their main work experience from their work in DFSC. The biology/botany trained technical staff have worked on seed physiology, bio-diversity and tropical botany in university and NGO environments before joining DFSC 4-5 years ago. The agronomist has (naturally) limited work experience before joining DFSC. The political scientist has worked with decentralization issues (Bangladesh) and worked on various research projects (including for the Ph.D degree) at CUF and universities in Germany and USA.

- **Technical Assistance and Consultancy Experience**

Of the 10 technical staff, six have experience from long-term assignments in developing countries, but only two have more than 5 years of experience. Another three have 2-3 years of experience from assignments in developing countries whereas the remaining one has less than one year.

By far the larger part of this experience working in developing countries has, however, been from assignments in one or more of the forest tree seed projects with which DFSC, more or less formally, has been involved in the past. The technical staff thus have very limited experience from a broader range of project and programmes for development and

environment assistance. The same is true with respect to short-term consultancy work. Though several of the staff have experience from short-term consultancy work, it is primarily in relation to the tree seed projects in which DFSC has been involved.

5.2 Other Expected S&L Resources

In case DFSC is integrated into S&L, the resources of DFSC, described above, will be supplemented with resources from the three other institutions being combined in the S&L. The resources from these other institutions, which will be available for research and development activities in the new centre related to forestry and natural resource management in developing countries, are briefly described below.

- **Royal Veterinary and Agricultural University (KVL)**

As part of its internationalisation process, KVL has a main focus on developing countries. KVL gives high priority to contributing to Danish development assistance and to the overriding objective of poverty alleviation. This is to be achieved through contributions to sustainable agriculture, management of natural resources and human nutrition. In the KVL strategies, forestry plays a main role in sustainable agriculture for improvements of rural livelihoods in developing countries. The resources of KVL involved in this, the Tropical Forestry Group, will become part of the resources of S&L and hence implement the KVL forestry strategy for developing countries through this centre under KVL.

The Tropical Forestry Group consists of 3 professors (Forest Economics, Silviculture and Forest Genetic Resources) and 2 Readers (Forest Ecology and Forest Genetic Resources). Furthermore, the permanent staff includes 4 Associate Professors (Tropical Forestry, Forest Genetics, Forest Mensuration and Forest Management and Planning), 4 Assistant Professors (Community Forestry, Tropical Forestry, Forest Policy and Conflict Management) and 8 PhD students. PhD students focus their work on research projects, whereas the permanent staff divides the time between research and teaching (and administration). Teaching responsibilities of the group include teaching in Development Economics and Tropical Forestry subjects in 13 MSc courses in the KVL Agricultural Development Programme for developing countries.

Present research activities of the Tropical Forestry Group, including the PhD research activities, focus on subjects such as medicinal plants and other non-wood forestry products, bio-diversity and people, conservation of endangered species and domestication of multiple-purpose species. Three long-term research projects are also undertaken in cooperation with Danida supported sector programmes in Bolivia (forestry management for timber and non-timber products), Nepal (community based management of natural forests) and Mozambique (proposal for use of forests and trees for improved rural livelihood). Other countries, where research activities take place, include PhD research in Thailand (genetic research), Laos (conservation of endangered species) and Vietnam (mangrove management).

Members of the permanent staff, as well as the PhD students, do typically have experience from work in developing countries in relation to their research activities, which include field research, workshops and training courses and often imply long-term cooperation with universities and other research institutions in the respective countries. Other international experience includes cooperation with international institutions like FAO, ICRAF, CIFOR and others. One staff member has had a long-term advisory assignment on a Danida financed project and one has worked for a longer period with FAO. Otherwise the experience of the permanent staff on long-term development assignments is limited. About half of the

permanent staff has short-term consultancy experience within their respective fields from several assignments.

- **Centre for Forestry and Landscape (FSL)**

FSL has a considerable resource base, covering a broad range of subjects of relevance or potential relevance for development research in the broad context of forestry and natural resource management. Around 40 researchers in total in four departments cover a number of disciplines, e.g. forestry, bio-energy, biology, agronomy, horticulture chemical engineering, architecture, geography and urban planning. Most of this staff presently uses most of their time on subjects and issues related to the Danish situation or to that of other European countries. However, each of the four departments does have activities through which experience on problems and conditions in developing countries are being gained. The core areas of work are sustainable forest management and ecology, urban greening, spatial planning and development of urban and rural areas.

The Department of Forestry focuses on sustainable forest management and the staff (ten researchers) has primarily their training background in forestry. The expertise comprises forest economy and policies, silvicultural systems/growth modelling, bio-energy and forestry management. Experience is primarily gained through projects in Eastern Europe, but nature quality assessment models, key habitat designation and sustainable forest indicators have been developed also in relation to forest management in Thailand (financed by World Bank and Danida).

Chemical and physical monitoring and analysis of ecosystems and of management impact are the focal areas of the Department of Forest Ecology and Research Laboratory. The staff of 12 scientists covers a wide range of fields related to forest ecology and research activities include subjects such as carbon-nitrogen interactions in forest eco-systems, wood for energy and influence of air pollution on forest stability. The department is participating in the "International Cooperative Programme on the Assessment and Monitoring of Air Pollution Effects on Forests.

Urban greening is another important area for FSL, the focal area of the Department of Park and Landscape and part of the wider theme of sustainable development of urban and peri-urban areas. Though the work of the 8 scientists of this department, focus is also mainly on issues in the industrialized countries. Experience has also been gained from work in Malaysia and South Africa on Danida and Danced financed projects. Most of the staff of this department does also have considerable international experience in other countries and contexts. Three of the staff has had several short-term assignments for FAO, including consultancies related to the FAO strategy for Urban and Peri-Urban Forestry (for FAO Forestry Division). Two others have considerable short-term consultancy experience and one researcher has around 3 years of experience in long-term technical advisory positions.

Focus of the Department of Urban and Regional Planning is spatial planning and development of urban and rural areas. The disciplines of the staff of ten scientists cover architecture, civil engineering, silviculture, horticulture, agriculture and geography. The research areas include interdisciplinary analyses and planning models for urban renewal and infrastructure. Use of GIS is central in planning and geographical analyses. Three of the staff has experience from consultancy work in developing countries. One staff has one long-term and several short-term assignments in Bhutan on land-use planning and GIS mapping and another staff has undertaken a major study of tourism related to a national park in Thailand.

- **Danish Forestry College (Skovskolen, SKS)**

SKS is a training college, where forestry and landscape engineering subjects are taught. Also forestry workers, environment and nature workers and guides are trained at the school.

The total staff of 13 persons has primarily forestry as their training background (MSc and BSc), but three staff has horticulture, biology and forest economy, respectively, as their primary training background.

All have considerable work experience and all have some experience from cooperation with developing countries. Three staff has long-term technical assistance advisory experience (one with more than 5 years) and also considerable experience form short-term consultancies. Most of the staff has some experience in consultancy work in developing countries, though primarily from two staff in addition to the three with long-term experience as well.

6. THE PERFORMANCE CONTRACT

Basis for the Performance Contract, to be set up between MFA and S&L, shall be an integrated research and development program. It is understood that this programme will be elaborated by S&L in a preliminary form during September-November 2003 and in a more comprehensive and detailed form during year 2004. An initial performance contract can be based on the preliminary programme and be revised after the first year, when the comprehensive programme is available.

In section 6.2 below an outline of the S&L research and development programme is suggested. It takes the proposal from the Working Group under S&L as the framework and starting point. Ongoing activities of DFSC, which in the opinion of the RM should be continued, should be integrated into this, as should the possible new DFSC work areas, identified by the RM and discussed in the following section 6.1. The research activities within this program, further identified and described by S&L, can be financed under the performance contract within its financial limits and under the conditions specified in section 6.3 below.

6.1 Possible New DFSC Work Areas

A key characteristic of DFSC is the close relation between research and practical development activities (cf. section 3.3. above). The point is that the involvement in development activities, i.e. in planning, design and implementation of development and environment assistance is research- or knowledge-based. Though this feature of DFSC is not as evident today as it was in the earlier days of the DFSC operations, it is a feature, which should be maintained and further strengthened in the future.

As the link has loosened and as tree seed projects (as they have been known till now), are being phased out, there is a need to identify new work areas, where this feature can be maintained. This section 6.1 presents RM findings in this respect, based primarily on the fieldwork undertaken as part of the review.

The starting point has been the present main DFSC activities, as described in Chapter 3, and focus has been on possibilities for future DFSC work in relation to Danish development and environment assistance within the agricultural sector programme support approach and under the MIFRESTA environment funding. The following distinguishes between the options related to DFSC's core profile and options related to newer initiatives, thereby attempting to follow the logic in Chapter 3.

- **Options Related to Core Profile**

As described in preceding chapters, the overall context for the research and development activities of DFSC have changed over the years. Thus, there is clearly a very limited basis, if any, for the tree seed projects of the past. Even though the design of these have changed somewhat over time, they are still very much focused on tree seed handling and on technical aspects. Even the more recent projects do not appear properly designed with respect to the institutional setting and socio-economic context and taking into account also the more programmatic approach of donors today, the tree seed sub-sector support will have to be provided in a wider context than the tree seed projects of the past.

The fieldwork in both Tanzania and Vietnam confirms that sufficient supply of quality seed and other planting material for plantations as well as for smallholder farmers continues to be a

problem. It is also found that the expertise of DFSC, related to its core profile, continues to be relevant in this context. The issue is whether DFSC can find approaches and means for "delivering" its expertise in a relevant way with sustainable impact as a result.

There is still a need to strengthen the "seed supply chain" from identified quality sources of seed to the final users, be it for government afforestation programmes or for improved livelihoods of smallholder farmers. There is also a need for conservation. Today however, the aim should not be to set up a government supply system, but rather to help establish a system where the private as well as the public sectors each play their appropriate roles. Support could be envisaged to help governments to establish "enabling environments" for the private sector to operate seed sources, nurseries and seed and seedlings trade businesses. A proper role for government would be to ensure proper conservation for biodiversity protection, for certification systems and for accreditation of institutions providing certification of quality seed sources and private dealers. This would include establishment of legal frameworks, regulations and guidelines and could in general become support to national forest programs, cf. Chapter 2.

Ongoing projects in e.g. Indonesia and Vietnam would seem to have openings for such work. Opportunities in such connections for developing the core profile of DFSC towards higher degree of relevance might be exploited. For Indonesia it may be too late, as the project will soon terminate and Indonesia is not a Danida programme country. In Vietnam, opportunities may still exist in relation to the pilot activities undertaken as part of the project, which is also being phased out, but over a longer period. The pilot-projects in Vietnam could be seen as applied research, closely related to provision of development assistance. Also in Tanzania there would seem to be scope for such activities related to the more traditional work area of DFSC, e.g. particularly in relation to conservation of indigenous species.

- **New Options 1: Trees in Agriculture**

Although trees on and around farms can have a number of positive effects (firewood, construction poles, fodder, soil nutrition, etc.), there are also negative effects. Trees compete with agricultural crops as they take up land, use water and soil nutrients and give shade.

In the lowlands of Tanzania, farmers do not often use trees in combination with crop farming and animal husbandry. One reason could be that they have limited knowledge of the potential benefits as well as of the potential loss from the competition with crops and vegetables and are therefore hesitant to plant trees on their farms. In Vietnam, forestry and trees are closely linked to agriculture in the mountainous areas of many provinces. In both cases, farmer oriented action types of research would be useful in identifying the best indigenous species for the various uses by farmers.

A basis for local development and income generation can often be developed from domestication of wild species of trees and bushes. These can already have a local contribution through collection in the wild for small markets. They are often high value edible products, like oils, resins and medicinal plants. There are also options in undertaking trials of potential new timber species for high value commercial plantings, including for smallholder plantings. The aim would be to harness the value of the local natural resources and improve livelihoods by supplying to the regional and global markets. The domestication can be technical (propagation and management), but it could also be e.g. about managing a common property resource.

The agricultural extension system is essential for promoting the use of trees in combination with farming and animal husbandry. There are agricultural extension officers at all administrative levels, including at the village level, where frontline extension workers live in the farming communities. In forestry, the extension officers are generally found only at the regional level, but often not at lower levels. The knowledge and attitudes of the agricultural frontline workers are therefore crucial for promoting the use of trees on the farms. Research is, however, needed and a research project like the present DFSC Petrea project, is pointing towards the type of research projects, which could be useful in several countries.

A difficulty in “reaching out” to the farmers, through, for example, the agricultural extension system in Tanzania is, that agriculture and forestry are two different “cultures”, administratively separate in two different ministries. Whereas agricultural extension officers work closely with farmers on their land, forestry extension officers typically have a “forestry policing” function, keeping people away from the forests. However, this is now changing under the present Director of Forestry in the Ministry of Natural Resources and Tourism, but combining the two extension systems is presently unrealistic. In Vietnam, trees seem to be more part of the extension system, but there the problem is that of reaching the more remote and poorer mountainous areas.

The Danida ASPS includes only limited support to forestry, including agro-forestry, both in Tanzania and Vietnam. In Tanzania this could have to do with the past Danish assistance in forestry related projects, which has focused more on conservation and social aspects than on ecologically sustainable and economically optimal utilization of the natural forests. Support in crop seeds and vegetable seeds are, however, part of the ASPS and it is natural to ask why tree seeds for agro-forestry are not included in that component. In Vietnam, the ASPS is focusing on lowland rice production and there are no forestry or tree related components. In the lowland areas in Vietnam, afforestation with protection forests is important in many provinces, but there is no cooperation between the tree seed project in Vietnam (focusing on seeds for protection forests) and the ASPS.

In Tanzania the best opportunities for future linking up of research activities to design and implementation of Danish support to agriculture are most likely through research cooperation with SUA, emphasizing, however, the scope for “outreach” via the agricultural extension system. In Vietnam, there is an ongoing tree seed project (with DFSC involvement over the coming two years). Therefore the scope in Vietnam at present lies in using the tree seed project as an “entry” to establish research activities related to trees and forestry at the provincial levels.

- **New Options 2: Forestry and Trees in Natural Resource Management**

Scope in Tanzania for linking up with support under the MIFRESTA funding does at this point in time appear encouraging. The programme “Participatory Forest Management” (PFM), implemented by the Department of Forestry under the Ministry of Natural Resources and Tourism and co-financed, among others, by Danida and FINNIDA, would seem to offer opportunities in the future. It will not be for the traditional tree seed activities of DFSC, but for a broader spectrum of design and implementation activities. The starting point would have to be on research, e.g. together with SUA.

The PFM programme in Tanzania has a budget line for research, but it is to be “demand driven”. Thus, needs will be identified by the districts and local communities in the regions included in the program. There is, however, considerable need for better understanding of the

ecological and economical aspects of local management of the natural forests. The ecological aspects include issues of how forest resources can be sustainably utilized, and not only conserved. The economic issues include marketing of the products from utilizing the forests and of the local conflicts of interest, which follows from increased value of improved natural resources. There are both costs and benefits of improving the natural resources which are generally unevenly distributed in the local communities concerned. Lack of understanding of these socio-economic issues, often constrains implementation of technically optimal solutions. A cooperative research programme (farmer focus, demand driven, action-oriented, multidisciplinary and with focus on ecologically sustainable utilization and the related marketing and distributional issues concerning costs and benefits) could be visualized in cooperation with SUA.

In Vietnam there would also appear to be good professional basis for DFSC to try to link up to the environmental assistance funding. Danish environmental assistance is, however, provided in a programmatic approach and the "green component" was cut out of the programme as a result of the cut in overall development and environment assistance from November 2001. This should not, however, prevent S & L from undertaking research, which in the future could form the basis for assistance as Vietnam is a Danida programme country with considerable assistance to both development and environment.

The FSSP&P (Forest Sector Support Programme and Partnership) could have provided an excellent opportunity for a Danish contribution, which could have focused relatively narrowly on seed. The FSSP is an example of the "Partnership" arrangements, which the Government of Vietnam has recently introduced as frameworks for donor cooperation with the Government and for donor coordination. Danida is a member of the partnership group, but has so far made no commitments for contributions to the program. It would have been an excellent opportunity for DFSC to come in with its technical expertise on seed and seed handling within a broader program, where other donors and Government of Vietnam would have taken care of the other aspects of the programme in which a "tree seed element" would have been a small, but important contribution within a comprehensive program.

There may be similar opportunities for DFSC in relation to the inputs of some of the other donors to the FSSP&P, i.e. KfW and the World Bank. Such involvement of the DFSC would be provision of consulting services for which the core profile resources of DFSC would be perfectly qualified.

Other opportunities in Vietnam could be envisaged in relation to the Danish (MIFRESTA) funded small environment projects in the provinces of Nghe An and Ha Tinh. There is a need in relation to these projects for species and provenance trials of indigenous species, which could contribute both to biodiversity conservation and protection afforestation and to increasing income and improving the living conditions of poor farmers, living in the more remote areas of these provinces. Applied research projects, combined with or being part of the above-mentioned pilot projects of the ongoing tree seed project, could be envisaged. Such research would, like the similar research mentioned for Tanzania above, be multi-disciplinary types of research and require institutional and socio-economic expertise in combination with the technical expertise.

6.2 An Integrated Work Program

As part of the process of integrating DFSC into the new Centre for Forestry, Landscape and Planning (S&L), a Working Group of representatives from the two sides has developed a preliminary programme proposal. This “Trees and Livelihoods” programme specifies three “core areas of expertise” of S&L:

- Trees for rural livelihood
- Urban forestry for public welfare
- Integrating research, training, and capacity building

The last of these three areas seems a “cross-cutting” approach to be applied in relation to both rural livelihood and urban forestry. Furthermore, though urban environmental issues are part of Danida’s environment strategy, it is more focused on the “brown” than on the “green” aspects. Urban forestry may therefore not be directly and immediately relevant for Danida.

Trees for rural livelihood on the other hand indicates a research and development area within which a performance contract with Danida could be visualized. The preliminary programme proposal goes on to further specify five priority areas for implementing program:

- Seed Handling and Genetic Resource Management
- Community Based and Participatory Forest Management
- Income Generating Activities, Timber and Non-Timber Products
- Domestication Processes
- Environmental Services of Forest Areas

These five priority areas are further described below. For each area it is also indicated how these priority areas compare with DFSC presently ongoing activities and the possible future DFSC work areas, discussed in section 6.1 above. Annex 9 indicates how the RM places the DFSC activities in the S & L categorization of priority areas. Furthermore, each section will indicate the types of expertise required and likely availability of such expertise in present DFSC staff resources as well as within the new S&L centre.

- **Seed Handling and Genetic Resource Management**

Genetic resource management is an important area in several respects. It is necessary to ensure that timber and non-timber product harvesting in natural forests and woodlands do not lead to degeneration or extinction of valuable species. The area is thus important for forest management systems and conservation strategies, which are related also to protection of biodiversity and hence environmental assistance. It affects poverty alleviation indirectly through income generation for people from utilization of tree and forest products.

Basic research to increase knowledge of genetic characteristics combined with more applied research related to e.g. provenance trials and seed handling procedures and techniques constitutes a research area, which can provide the technical knowledge upon which utilization and conservation strategies and policies must be based.

The area relates very much to the important “international public good function” that DFSC has been entrusted (cf. Chapter 3), including the activities related to the library services, publications and information, seed store and establishing networks and partnerships. Some of the most important ongoing activities are the production of guidebooks, leaflets and reports,

the Neem Network, the collaborative work with IPGRI on recalcitrant seeds and support to formulation of national (mainly in-situ) conservation strategies. As mentioned in Section 6.1, there is a continuous need to strengthen the “seed supply chain”, not by setting up a government system, but through support to governments to establish an “enabling environment” for the private sector. This includes establishment of legal framework, regulations and guidelines.

The present DFSC resources are very well suited for designing and implementing research activities in this area. Combining the resources of DFSC with the other expected resources of S&L, particularly the KVL resources, with which DFSC is already cooperating, will lead to a further strengthening of the basic research aspects of the work of DFSC and similarly give a practical angle to the work presently undertaken by KVL. The merger will thus imply considerable synergy between the resources of S&L in the future. Only in relation to the more institutional support to creating an “enabling environment”, is it questionable whether the resources are sufficient.

It should be emphasized that it is basically a natural science and technical research area and an area in which DFSC has been working for many years. Though essential new research results can still be visualized within this area, the scope for applying the results in developing countries depends very much on institutional conditions in the developing countries and the relation of these to the Danish resource base. DFSC has in the past been part of an extensive institutional network through which research results have influenced practical development work. This network is still there, but the participating institutions in the developing countries are not as centrally placed in relation to political decision-making today as they used to be. Thus, the two institutions, which are the direct cooperating partners with DFSC in Tanzania and Vietnam, have limited influence on national forestry management and on national policies and strategies for conservation, sustainable utilization or biodiversity protection.

Conditions are different in different countries, but the influence of DFSC activities seem to be very limited also in e.g. Nepal and Indonesia. The point is that a much more complete understanding of the institutional and political context in the respective developing countries is necessary for designing relevant research activities and for establishing institutional relations through which research results can be disseminated and applied. This means that research activities in the genetic resource management and seed handling area must be closely related with research activities in one or more of the areas mentioned below and in which DFSC resources will be supplemented also with institutional, economical and political expertise from the other S&L resources.

- **Community Based and Participatory Forest Management**

Both community management and participatory forest management relate to de-centralized management of forestry and related resources. Traditional forestry management has been a centralized state responsibility, focused on state plantations and protected natural forests. De-centralized forest (and other natural resource) management is based on the perception that people who live in the forests or in their vicinity could more efficiently manage the resources than a government run centralized system, which often requires more resources than available. It is part of the idea that people will be willing to and efficient in managing the resources, if they benefit in one way or another by doing this.

As a research area, it is basically an institutional research, i.e. social science rather than a natural science, research area. Research activities would focus on which institutional

arrangements are most efficient in different contexts for ensuring sustainable utilization and environmental protection. It is a research area in which property rights and land tenure systems play a key role and where economic incentives, potential social conflicts and economic distribution issues are key subject areas for research activities. Seen in relation to international trends and donor policies at present, it is also an important area. Decentralization of natural resource management is likely to continue to be a main policy in most developing countries for some years to come and it is an area where there is a clear lack of research results.

DFSC has only very limited activities at present in this priority area (cf. Annex 9). However, though the Petrea project belongs more to the “income generation” and “domestication” categories, mentioned below, it should be mentioned here also, because it is “participatory research” concerning “de-centralized” use of trees, i.e. farmer use of trees on their agricultural land. More importantly in this context, as mentioned in Section 6.1, is that Petrea is undertaken in close cooperation with SUA in Tanzania. This appears to be a well-connected institution and participatory management of natural forests is today the key forestry strategy in Tanzania. This strategy is also supported by Danida and the Danish support includes support to (demand-driven) research. This provides an excellent opportunity for the future S&L to follow up on the Petrea project and on the cooperation with SUA with a view to come in with research activities related to participatory management of natural forests.

DFSC has limited resources for such types of research. It is mainly KVL that has the resources and ongoing research activities. However, combining the DFSC and other expected S&L resources in these activities would clearly benefit both and thus realize synergy effects, though outside expertise will continue to be needed for the time being. Research results from such activities could well be relevant also for other countries or inspire to research projects in other countries.

- **Income Generating Activities, Timber and Non-Timber Products**

This priority area is important as it directly relates to poverty alleviation. It could be considered to divide this area into two parts, namely one at micro level focusing on the forest users, and another on macro level with a focus on national economy.

At the micro level, the perception that trees and forests can provide benefits other than timber is essential to participatory forest management. As mentioned above, management by people who live in or close to the forests presupposes that people get benefits from the forests in return. If people are allowed to use the forests (sustainably) rather than being expelled from them, they will also protect the forests.

This is the philosophy and experience, if not research, suggests that this is true. The issue is also, however, whether the forests do produce products that can be harvested by people taking care of the forest management. A first category of important research areas thus relate to issues about increased knowledge on the existence of forest products other than timber. Availability of such products in different parts of the world, the utilization and marketing of such products and the economics of exploiting them are among the key subject areas. Combining such utilization of forest products with sustainability issues and with conservation for endangered species and for biodiversity protection are also important research topics.

The DFSC ongoing Petrea project is an excellent example of the type of research projects, which could “spearhead” agro-forestry research in the new S&L set-up. Though the resources

available for this type of research is limited in both the present DFSC and the other expected S&L resources, the future S&L would have some base from which the agro-forestry subject area could be further developed. Again, SUA in Tanzania could be an important national research partner, and naturally the ongoing collaboration with ICRAF is an important opportunity for joint research activities.

The possible new research activities, mentioned in section 6.1 above, also indicate an important type of research, closely related to development and environment assistance. There are clear and immediate opportunities within this programme priority area, which should be exploited.

At the macro level, there is a growing interest in the importance of good forest management for the national economy. A number of “initiatives” are emerging through national and donor/NGO programs. Some of the examples are the attempts to increase the quality of the forest through FSC forest certification, the increased focus on eco-tourism as an important national income (for instance in Costa Rica), the ongoing debate (e.g. at the WB and TSA 6 in Danida) on establishing financial mechanism (such as the payment of environmental services) and incentives system (tax and tenure systems) for the forest users.

Presently, both DFSC and the others in S&L have limited experience in this type of macro-level research, but as the major Danish “forestry” institution it would seem relevant to start (re)focussing on this new and growing area through a multidisciplinary research program.

- **Domestication Processes**

This priority area is closely related to the two areas of the preceding sections as it entails forest management for local development and income generation for the farmers. The focus is, however, on the technical aspects of domestication and involves species and provenance trials to identify and harness valuable natural species, e.g. fodder tree species.

As such it also entails a category of research topics in relation to income generation from forestry and trees which concerns farmers use of trees on their farms for additional income generation and diversification – agro-forestry, as the Petrea project.

The RM field visits in Vietnam identified opportunities for designing research projects in connection with ongoing Danida projects in two provinces. Issues, which could appropriately be taken up in connection with these are whether more appropriate tree species, appropriate for protection forest replanting but at the same time economically beneficial to the farmers can be identified, analysed and grown by farmers. As DFSC is also presently involved with a pilot project in one of these provinces, there is an institutional link, which could be utilized for identifying and designing a “agriculture-cum-forestry” research project.

It is a research area well suited for the resources available in DFSC and also important parts of the other expected S&L resources will contribute to research activities in this area. Participatory research methods seem particularly needed within this area in order to identify species and localities, which will provide the best opportunities for farmer adoption of research results.

- **Environmental Services of Forest Areas**

This is a broad priority area, which will need to be further identified and described. It is, however, an important area in principle, focusing on the role of trees and forests in relation to protection of natural resources such as e.g. water resources, natural forests, soil fertility, etc. Also this research area is closely related to the above research areas as protection forests and tree planting can be beneficial in income generation and other aspects as well as being protective, e.g. against erosion, land-sliding or water sources. Specific research activities within this priority area are therefore likely to belong as well to one or more of the other priority areas mentioned above. The environmental protection perspective on the role of forests and trees is, though, an important perspective to keep in mind, both as a stand-alone type of justification and as a perspective in combination with the biodiversity and income generation perspectives.

Specific research activities in this area could be visualized identified in relation to e.g. watershed management schemes or more broadly in relation to sector support programmes within agriculture, water and sanitation (water resource management components) or environment.

- **Project Support Activities**

It is suggested that development work, “project support activities”, which have played an important role in the past for DFSC as well as for other parts of the new S&L, will continue to be an important category of activities of the program, though not of the performance contract. Thus, participation in identification, planning and implementation of development and environment assistance, for Danida and other donors, should constitute an important work area under the integrated program.

This part of the programme could include DFSC activities already planned for the nearest future, related to the projects in which DFSC is presently involved, formally and/or in reality, cf. Chapter 3. As these projects are, however, planned to terminate or be phased out in the near future, new activities must be planned for.

An essential feature of the past involvement of DFSC in development work has, as mentioned earlier, been that the work has been “knowledge-based”. The activities of DFSC (or its staff) have been closely related to the research work of DFSC and hence utilized the knowledge base on seed handling, which has been built up over the years. This feature should be maintained in the new centre and future activities will need to be identified in relation to the research program, i.e. to outcomes of research projects under the above five headings.

It will take some time to build up such a programme for the new centre, but DFSC as well as other parts of S&L are presently involved in activities, which could become part of the programme immediately. Initiatives to identify future new activities could also be taken immediately, either in relation to ongoing research or development projects or in relation to new research opportunities.

6.3 Format and Conditions

A proposed performance contract between MFA and S&L will be worked out by the S&L during the coming months. The RM suggests that it is structured along the same lines as the one that was established for DCISM (Dansk Center for Internationale Studier og

Menneskerettigheder) as the conditions are similar with a very uncertain situation with e.g. lack of clarity on physical location, research programme and especially institutionally set-up. This – as in the case of DCISM – implies also that the first year should be seen as a transitional year during which the remaining issues need to be clarified and as a consequence the performance contract sharpened up.

The headings below follows the headings in the suggested format for the performance contract (with the exception of an introductory section).

- **Objectives, Organization and Financing**

The overall objective of the performance contract should be similar to Danida's overall goal, i.e. relate to research that leads to increased knowledge on poverty alleviation and more specifically the importance of trees, forests and natural resources NRM for livelihood improvements.

S & L will establish a research and development program, managed by a fulltime manager, who has a broad competence on trees and forestry related to development and environment assistance. Procedures for cooperation and responsibilities of the departments shall be worked out by S & L. It is of particular importance that the international programme manager has authority on financial matters of decisive importance for project implementation.

It is assumed that the contract will entail a total amount of funding of approximately the present DFSC core funding level, i.e. of DKK 6 million per annum. It is also assumed that this, together with other DFSC funding to be carried over, will make it financially possible to transfer the entire present DFSC, technical and administrative, staff (except the present Director) to S&L.

Furthermore it is assumed that all contractual obligations and commitments (e.g. related to research projects with outside funding) are respected by and carried over to S&L, including the funding. This also means that DFSC "own" funding obligations and commitments towards such projects are to be covered by the performance contract. These present DFSC commitments are highlighted in the DFSC proposed budget for 2004, shown as Annex 8 (a) and (b).

Otherwise, funds provided under the performance contract shall not be earmarked to "DFSC activities" in S&L. Not all activities, as they have presently been planned by DFSC for 2004 shall necessarily be carried over. Part of the activities are not related to commitments to outside parties and can, of course, be changed in accordance with new requirements in the S&L work program. In order for the performance contract to contain activities leading up to a total funding of DKK 6 million per annum, these new activities, for which part of the present DFSC resources are to be used, must be specified, costs estimated and be included in the proposed performance contract.

Furthermore, part of the performance contract funds shall be used to finance services purchased from outside institutions, as required in order to staff the research activities adequately, as for the Petrea project.

It is necessary to distinguish between DFSC's ongoing committed research with contractual obligations (i.e., DFSC's public good function and newer activities, e.g., Petrea) and new research initiatives with no present commitment. For the ongoing research, the salary and

other costs shall be covered 100 %. Some of these projects will, however, terminate within 1-2 years. For the new initiatives it is suggested that only up to 50 % of the total costs can be included in the performance contract. This ensures that the new research initiatives are based on S&L own priorities and hence demonstrate its commitment.

Costs of management and administration of the activities of the performance contract are not to be included in the performance contract. Instead a standard overhead, as per MFA normal procedures, should be applied for each activity area.

The performance contract shall not cover the entire Trees and Livelihood programme of S&L. It is envisaged that S&L carries out a number of additional activities through financing from other sources, such as RUC, ENRECA and own funding windows. On the other hand these additional activities are necessary in order to obtain important synergy effects and as additional income generation for development assistance related research. The same is true for the project supporting activities (including short-term consultancies) which should not be part of the performance contract, but which must be considered important support to the research activities in the performance contract.

- **Outputs - the Research and Development Programme**

To ensure high quality of the research to be undertaken by S&L, it is necessary to formulate a number of process and output indicators, that together will make it possible to review and evaluate the progress made. Such indicators shall be specified in the proposed performance contract by S & L. Some ideas are provided below.

It is suggested to structure the content of the performance contract according to the five priority areas plus the project support activities (cf. Section 6.2). The research and development programme thus contains activities related to:

1. Seed handling and Genetic Resource Management
2. Community Based and Participatory Forest Management
3. Income Generating Activities, Timber and Non-Timber Products
4. Domestication Processes
5. Environmental Services of Forest Areas
6. Project Support Activities

The main process and output indicators for the five first areas relate to research. For each area, quantitative details such as a short description of each research topic, the expected outputs of research project, number of expected research reports, use and type of man-months and timing should be provided. These quantitative details are essential management tools and would make it possible to present the actual resource use for each research projects or activity to Danida.

In addition to these more quantifiable indicators, it is central that S&L demonstrates that the quality of the research projects is high and that the projects are relevant to Danida. The includes issues such as to what extent the research conducted meets the international research standards, to what extent participatory and multidisciplinary research methods are applied, to what extent the research is “anchored” internationally and nationally through collaboration with local (and Danish) partners, and to what extent the research is relevant for Danida development assistance (e.g. demonstrate the importance and relation to ongoing SPS programs).

The first research area (Seed handling and Genetic Resource Management) is as already discussed in principle a continuation, consolidation and expansion of DFSC's public good function and involves therefore not only research but also seed store, information, library and networking activities. Further S&L is expected to actively participate in international research in order to be updated on the latest research results. The RM, therefore, suggests that the process and output indicators for this area, in addition to the indicators mentioned above on research, includes indicators on the extent and quality of networking (e.g. number of active international networks, number of collaborating institutions) and of information and publications activities (e.g. use of library services, number of visits on homepage, number of international publications per year). In addition, it could be considered to include indicators on S&L's obligations to continuously upgrade the resource base (e.g. number of Ph.D. and M.Sc. students)

The Project Support Activities (area 6) are the planning, design and implementation activities related to development and environment projects and programs. These are important in the overall future international programme of S&L, but shall in general not be financed by the performance contract, but rather be a source of income for S&L in addition to the performance contract and other external funding. However, an amount (say DKK 500,000 annually) could be included in the first performance contract for financing identification work. Part of this work will need to be undertaken by external resources. The indicators for this area are not related to research, but more to actual involvement in development programmes and projects. The indicators could thus relate to e.g., number of SPS programmes in which S&L are actively involved through development related research or consultancies.

In addition to the six areas, the RM suggests that funds equivalent to 3-6 person-months are earmarked for a desk function. The idea is that MFA is able to request S&L technical assistance in specific cases for shorter duration, for example in relation to natural resources related NGO-application, being up-to-date on the latest international development in forestry or participation as Danida's representative in international conferences.

The RM suggests that the relative importance of the six areas in the performance contract is fixed through defining a specific share of the resources for each area. This is to ensure that S&L moves into the "newer" research areas. A reasonable share could be forty-sixty, i.e., 40 percent of the funds earmarked for the first area and the remaining 60 percent for the areas two to five in addition to the project support activities and the desk function.

- **Division of Responsibility, Follow-up Mechanism, Reporting Requirements and Renegotiations**

In addition to the above, the performance contract should specify the division of responsibility between MFA and S&L and furthermore the follow-up mechanism, reporting requirements and renegotiations.

The RM suggests (on S&L's request) that the performance contract uses a rolling 4-year format that progress reporting is done on a yearly basis and that an internal midterm review is carried out. In addition, it is suggested that, due to the uncertain situation for the initial performance contract, the programme is (externally) reviewed after the first year of implementation.

7. CONCLUSIONS AND RECOMMENDATIONS

7.1 Main Conclusions

The objective of the present thematic review of DFSC has been interpreted to imply analyses of:

- the impact and relevance of DFSC activities,
- the possible future role in Danish development research and development assistance
- the future institutional set-up of DFSC

DFSC has since its inception in 1969 played an important role, internationally as well as in relation to Danish development and environment assistance. The centre was originally established as part of an internationally coordinated programme on forest gene resources supported by Danida. It has over the years undertaken a considerable amount of internationally highly esteemed research work on technical aspects of seed handling and genetic resource management. The centre is therefore today an "international knowledge centre" within these particular areas and provides valuable and appreciated information and related services to a number of international and national institutions working in this field.

The centre and/or its key staff have also been heavily involved in Danish bilateral development and environment assistance since the late 1980s through participation in planning, design and implementation of "tree seed projects" in a number of developing countries. There is no doubt that these projects were relevant in many countries for addressing the problems of shortage of quality forest seeds for government afforestation efforts to combat the "forestry crisis", following years of deforestation and land degradation. There is also no doubt that these projects, together with the general work of DFSC, have been instrumental in raising the awareness of the importance of using quality seeds, in developing and transferring important knowledge on seed handling and genetic resource management and in supporting governments in developing countries in their efforts to increase the supply of quality forest seeds for government plantation replanting programs.

Though the availability of quality forest seeds still seems to be a problem in many developing countries, the context for assistance has generally changed substantially. Though afforestation is also still on the agenda, responsibilities and implementation have increasingly become decentralized, from central government agencies to local government units and communities, and from government to the private sectors. More emphasis is also today given to management of natural forests, to biodiversity protection and to sustainable utilization of forests and trees for income creation and improved livelihood purposes. These overall changes mean that the institutional contexts in which to "deliver" the DFSC technical messages have become more complex and varied from country to country. The changed focus on forestry and trees as resources for sustainable use and not only for conservation also implies that social and economic issues are more in focus today than they were in earlier periods.

DFSC has responded to these changes in the overall context of developing countries, but has at the same time maintained a strong focus on technical and seed related aspects. DFSC staff is today heavily biased towards the natural science disciplines with nine staff with this background against one staff with a social science background. Also, though all staff are today more involved with institutional and socio-economic research and development work than in earlier periods, their development experience background for this work is either very

limited or basically gained through projects for which design and implementation have been heavily influenced by DFSC as an institution and/or by key DFSC staff or associates working in their personal capacities.

For DFSC to continue to play a significant role in Danish development and environment assistance in the future, it is necessary for DFSC to become an integrated part of a larger and broader resource base, which can utilize the expertise available at DFSC today. There is also scope for this, i.e. for utilizing these resources in a broader context. Quality seed supply is still a problem in many countries. With more staff resources with training and experience on institutional aspects of development and environment assistance, DFSC would be better equipped to "deliver" its technical expertise to strengthen the seed "supply chain" in the present institutional contexts. There is also scope for new types of research activities, which could broaden the expertise of DFSC towards sustainable utilization of forest and tree resources for income generation and improved livelihood, but it will require a further change in the balance of the key staff composition from the present natural science bias towards more staff with a social science/economics background. The present DFSC can maintain its technical focus, but to utilize its resources for development assistance requires inclusion in a broader context.

These changes are closely related to the future institutional set-up. As mentioned in Chapter 4, the deskwork concluded that there was only one realistic institutional option open, i.e. the integration of DFSC into the new centre, Forestry, Landscape and Planning (S&L) under KVL. As this institutional integration process started only when the present thematic review started, the main role of the review became to facilitate this process. This also means that the focus of the review has been on the institutional issues, which the integration raises and on the possible content of a performance contract between MFA and the new centre.

The institutional issues, cf. the above Chapter 4, have not yet been settled, but the integration process is progressing and the final institutional set-up is expected to be in place by the end of 2003. Exactly how this set-up will be, cannot be foreseen at this point in time, but it is important for MFA that it supports realization of synergy effects, that it leads to a broader and more relevant resource base in the future. It is similarly important that it supports the establishment of an international program, which justifies an MFA financing contribution through a performance contract under its development research funding. These objectives can be obtained through a proper and clear settling of the outstanding institutional issues, if not necessarily in the details as suggested in Chapter 4, then at least in such a way that that planning and implementation of a major international research and development programme to the benefit of developing countries is secured. Recommendations of the RM concerning the institutional issues, which could ensure the objectives of MFA, are given below.

In addition to settling the institutional issues, the new centre (including the present DFSC resource base) needs to set up an international research and development program. Steps in this direction have also been taken. There is, however, some way to go before a comprehensive programme is formulated in sufficient details for a performance contract with MFA to be set up on that basis. A proposed performance contract is expected submitted to MFA by the new centre before December 1, 2003. Section 6.2 above indicates the basic activity categories suggested by the RM for this performance contract and section 6.3 specifies suggested format and conditions.

As neither the result of the institutional integration process nor the content of the international programme and corresponding performance contract were fully known by the time of the

termination of the review, this final report cannot provide a final assessment of the extent to which the new institutional arrangement will provide MFA with a sustainable and relevant resource base for the future assistance within forestry and natural resource management. The review can, however, indicate some basic conditions, which in the judgment of the RM, need to be fulfilled for this to become the case. It is necessary that the institutional issues are settled in such a way that they ensure a sufficiently high profile of the international work of the S&L centre and it is necessary that a satisfactory content of the international programme and corresponding performance contract is worked out by the centre. The recommendations below are intended to facilitate this.

7.2 Recommendations

• Key Recommendations

It is recommended that:

- Danida requests S&L to submit a 4-year rolling performance contract proposal before December 1, 2003 with a content to be worked out in line with the indications given in Ch. 6 above,
- Danida approves this proposed performance contract submitted by S&L under the pre-condition that:
 - The institutional issues have been settled in accordance with the recommendations on institutional aspects specified below
 - The proposed performance contract has been established as outlined in Ch. 6

• Institutional Aspects

It is recommended that:

- DFSC technical staff is integrated into S&L in two groups, one to join the genetic resources department and one to join the economy, policy and planning department, or, alternatively, to let the staff (including the administrative staff) of DFSC choose individually, which department to belong to.
- MFA is represented in the Management Board as an important user of the services of S&L, the operations of which are under the final responsibility of the Ministry of Science.
- a “Trees for Development and Livelihood” programme is established under S&L, across the departments, and with a content as described in Ch. 6
- a fulltime “international programme manager” position is established and publicly advertised
- the “international programme manager” shall:
 - work exclusively with and be directly involved in the research and development activities of the international program

- be responsible for planning and implementation of the programme and have the day-to-day management responsibility for efficient and flexible implementation of the program
 - have the financial control of all external funds received for the international programme by S&L
 - have authority to establish agreements with the departments of S&L and contracts with external entities on use of internal resources and for hiring of external resources, as required to plan and implement the international program
- the international programme manager shall have substantial and broad qualifications on natural resource management, experience from Danish development and environment assistance and be familiar with the Danish resource base in these areas
 - an “international secretariat” is established as a staff function to the international programme manager
 - the financial resources brought into S&L through the integration of DFSC consists of the funds covered by the performance contract, the end-2003 balance on the DFSC “accumulated overhead” account and the funding covered by contracts between DFSC and external institutions
- **International Research and Development Program**

It is recommended that:

- An initial programme is developed by S&L before December 1, 2003, containing the main categories of activities specified in Ch. 6
- Danida accepts that the initial programme is rather broad and general with regard to activities, which are new compared to the present draft work plan of DFSC for 2004, cf. Annex 8
- the programme is revised after the first year of implementation
- Danida, through its performance contract monitoring, revisions and renewals, ensures that:
 - the approach of combining research and practical development work, as two mutually reinforcing work areas, is maintained in the S&L program
 - synergy effects are realized and that the present momentum towards establishing a relevant resource base for Danish development and environment assistance within natural resource management is kept up
 - the international public good function related to seed handling and genetic resource management is consolidated and further developed