

# Darwin Initiative for the Survival of Species

## Annual Report

(for supporting documents, see bound Appendix)

### 1. Darwin Project Information

<b>Project title</b>	<b>Darwin Initiative Research Exercise on Community Tree Seeds (DIRECTS)</b>
<b>Country(ies)</b>	UK / sub-Saharan Africa
<b>Contractor</b>	Seed Conservation Department, Wakehurst Place, Royal Botanic Gardens, Kew
<b>Project Reference No.</b>	162 / 12 / 001
<b>Grant Value</b>	£180 k
<b>Start/Finishing dates</b>	June 2003/June 2006
<b>Reporting period</b>	30 April 2004 (for the period June 2003 - March 2004)

### 2.



### 3. Project Background

Forest biodiversity, especially the multipurpose trees, supports the daily life of millions of people in sub-Saharan Africa. Nonetheless, they are disappearing at a rate of 1% a year. The identified priority tree species of the region, which occur mostly in vulnerable areas of dryland Africa are not only of known use, but over 30 % are red-listed by IUCN. Although the need for the conservation and sustainable use of these species is clear, appropriate protocols for handling seeds of these species are far from optimal. The 4th Workshop for African Tree Seed and Biodiversity Centres (Burkina Faso, 2001), highlighted the need to strengthen the limited expertise of, and experience in, seed conservation techniques in institutes across Africa. Research, capacity building and networking on seed provision, storage and use will contribute to this urgent need. Hence, DIRECTS' purpose is to enhance the capacity of sub-Saharan African tree seed and biodiversity institutes to conserve and sustainably manage native species of local importance (about 60 species), through research on tree seed biology, training and information exchange.

### 4. Project Objectives

DIRECTS' purpose is to enhance the role and capacity of institutes in the conservation and sustainable use of native tree seeds of community value. The project will ensure the transfer of the benefits of the knowledge and expertise gained during the last decade by the Seed Conservation Department (SCD, including the MSB Project) in seed science and technology, including on African tree species. African scientists will be trained in topics including seed physiology, desiccation tolerance mechanisms, storage potential and germination methods. They will then apply this knowledge to the SAFORGEN priority list of African tree species in need of conservation and sustainable use. Working with SCD and IPGRI, as a network, they will generate further knowledge concerning these indigenous species and develop better protocols for seed collection and handling. The scientists will thus become better able to sustainably conserve African genetic biodiversity. Furthermore, the resultant body of linked and confident African seed scientists will be well placed to advocate for, and enhance national biodiversity policies.

The overall objectives of DIRECTS have not changed, but the operational plan has been modified over the last year. At the start of the year there was a delay to funding that impacted on the recruitment of the Research Officer (0.5 time) in the UK. This meant that Moctar Sacande worked to help set up the UK workshop before he was officially in post (i.e. MSB Project gift-in-kind). In addition it was agreed that the web development work would be moved to Year 2. At the time of the half-year report (Oct 03), we noted that negotiations over the MoUs with the wide range of target (16) countries had delayed the initiation of the field and lab activities in country, and requested that any under-spend on such activities be carried into Year 2. We received no specific comment from the Darwin Secretariat (monitoring unit) on this suggestion. In addition, we noted that the list of target species had been expanded to > 80 species, based on the group work at the UK workshop. This was necessary as the SAFORGEN list included three genera (*Combretum*, *Entandrophragma*, *Terminalia*), to which we have now added named species.

## **5. Progress**

### **History**

The project concept was born following the 4th Workshop for African Tree Seed and Biodiversity Centres (Burkina Faso, 2001), at which a request was made for international agency support to strengthen the limited expertise of, and experience in, seed conservation and use techniques in institutes across Africa. This project was developed with the managers of the partner institutes via meetings, email / fax, including the SAFORGEN member countries. It took more than a year, approaching and seeking letters of support/interest from partners. All have enthusiastically supported the aims of DIRECTS, and all partner countries have a long-term commitment to work on indigenous biological material, as part of their developing national policies under the framework of the CBD.

### **Key developments in 2003-04**

#### ***June 2003***

A Kew Advisory Committee to the DIRECTS project was set up, composed of Dr Kate Gold (Training Officer), Dr Paul Smith (International Coordinator for Southern Africa) and Dr Colin Clubbe (Kew Herbarium). The management role of IPGRI is not resolved (see later comments). The committee met for the first time on 2 July at Kew to discuss an overview of the DIRECTS project (implementation, the forthcoming workshops, etc). The meeting was particularly informative about, for instance, how field data on the tree populations could be used to contribute to species' status reports for IUCN. One possibility is to consolidate this information (produce reports) with the partners at the final workshop (2006). The paperwork for the appointment of Dr Sacandé as DI Research Officer (0.5 Band D post) was approved. The 3-year appointment started 1 July 2003. Preparations were made for the UK workshop, and all prospective DIRECTS partners were invited to participate, with one delegate per institute, including IPGRI. However, 'seed handling protocols' were not distributed before the meeting as we thought it best to seek partners' comments and to work through protocols at the African workshops scheduled for August and September. A review of seed handling information for the species was submitted on 30 June to the journal *Plant Genetic Resources Newsletter*.

#### ***July 2003***

Thirteen countries were represented (Botswana, Burkina Faso, Cape Verde, Cote d'Ivoire, Ethiopia, Ghana, Kenya, Madagascar, Malawi, Mali, Niger, Tanzania and Uganda) and the UK planning workshop. Six other countries (Benin, Gambia, Senegal, Sudan, Togo and Zambia) and IPGRI were not able to participate. The week-long programme (7-12 July 2003) at Wakehurst Place, included information on the project, its implementation and management (training, research, data, finances, reports etc.) and discussions on the two, planned regional workshops. The delegates reviewed information on the 59 target species, and identified 25 other species of interest from three target genera. They shared information on availability of seeds, quantities in store, the state of production and accessibility to the trees in their natural stands. With the excellent help of Trevor Butler (Kew Press Office) a 'news release' was issued, resulting in interviews and subsequent media coverage in *The Times* newspaper (national; 11 July), the *East Grinstead Courier* (local; 17 July), *Southern Counties Radio* (local; 10 July) and *Southern FM* (local; 11 July), *British Satellite News*

(recorded on 14 July, and used by CNN; global) and Reuters (global). Immediately after the workshop preparations started on the MoU. With the excellent help of Kate Davies (Conventions and Policy Unit, Kew) the DI standard 2 page MoU was expanded to 10 pages.

### ***August 2003***

The West Africa regional formal training in seed conservation research techniques was held at Centre National des Semences Forestieres, Ouagadougou, Burkina Faso from 20-26 August 2003. Although the target was 16 participants, the 7-day course (mainly delivered in French, partly in English) involved 21 participants from Benin, Burkina, Cape Verde, Cote d'Ivoire, Ghana, Mali, Niger, Nigeria and Togo. A representative of IPGRI attended the whole week. To enable wide impact and long-term sustainability, two trainees per institute were present, following receipt of training needs assessment forms that confirmed they had at least a year's seed lab experience and formal education from BSc to doctoral degrees. The workshop science programme was approximately 60 % theory / 40 % protocols, lab practicals and discussion of problems. A whole day each was spent on (i) developmental studies and collection of quality seeds, (ii) seed germination and quality assessment, and (iii) seed desiccation tolerance and storage longevity of seeds. Because most attendees were not at the UK workshop, the proposed institutional involvement in DIRECTS was reviewed and evaluated, and all management issues (information exchange, outputs, finance, reporting, the draft MoU, etc) explained / discussed. Except for a few organisational problems (late information due to internet failure) the workshop ran smoothly with all completed evaluation forms indicating very positive views about the content and quality of the workshop. The trainees were very keen and enthusiastic about the project activities, which they found, would address their main concerns about their tree seed lab performance as articulated by them in their presentations at the workshop. This was a fruitful exchange and a good step towards establishing an understanding of shared, regional problems. Copies were provided of all presentations and supporting documents (e.g. reprints), and a French version of the DI Botanists Guide to the CBD (hardcopy and CD) made available. The attendees were presented by Mr Boubacar Drabo, Secretary General of the Ministry of Environment and Water, with a 'Certificate of Participation' in the workshop. The workshop was given the top headline on Burkina National TV, and had a good coverage in the four main national newspapers, with titles like 'Conservation des semences, l'Afrique pense a demain' (seed conservation, Africa thinks of tomorrow).

### ***September 2003***

The MoU (with a short summary translation in French for the francophone countries) was finalised and sent out to the West-Africa partners and hand delivered to participants at the East-South African partners at the regional training workshop held at the Forestry Research Centre, Addis Ababa, Ethiopia from 25 Sept – 1 Oct 2003. The one-week programme, similar to the West African training programme (see above) was delivered in English for 20 participants (the target was 16) from Botswana, Ethiopia, Kenya, Malawi, Tanzania and Uganda. Evaluation of this workshop was also positive. A film crew was present at the opening ceremony, but precise data on press coverage in Ethiopia (and the other countries except Burkina Faso) is not yet available. Ministerial level officials were present at both the opening and closing ceremonies and involved in the awarding of 'Certificates of Participation'

to the delegates. DIRECTS was promoted at the 17<sup>th</sup> Association d'Etudes Taxonomiques de la Flore d'Afrique Tropical (AETFAT) congress (Addis Ababa, Ethiopia, 21-26 September). Dr Sacandé presented a talk in the session on 'Taxonomy and ecology of African plants and their conservation and sustainable use,' attended by 200 delegates, including 75 from African institutions. This will be published in the conference proceedings [Sacandé M, Pritchard HW. (2004). African tree seed conservation research: opportunities and implementation].

### ***October 2003***

The review submitted to PGR Newsletter in June was reformatted to separate the science from the network content, resulting in two submissions: 1) Sacandé M, Pritchard HW and Dulloo EM. Seed science and technology needs for SAFORGEN trees for conservation and sustainable use. *Plant Genetic Resources Newsletter*. IPGRI, Rome, Italy; and 2) Sacandé M, Pritchard HW. Seed Research Network on African Trees for Conservation and Sustainable Use. *Forest Genetic Resources*. FAO, Rome, Italy. DIRECTS was covered in the Newsletter of the Millennium Seed Bank Project (SAMARA, issue 5), which is available in English, French and Spanish. The project half-year report was written and submitted.

### ***November - December 2003***

Five country MoUs (Tanzania, Nigeria, Niger, Cote d'Ivoire, Burkina Faso) were countersigned and one original sent back to each respective partner. The AETFAT paper was written up and submitted for the congress proceedings.

### ***January - March 2004***

The second meeting of Kew Advisory Committee to the DIRECTS project, was held on the 23<sup>rd</sup> January, to discuss development and progress of the project. As one of the outputs, the meeting advised to consider the mid-term workshop recommended by the partners.

During a visit to Madagascar (MSB Project gift-in-kind) in March 2004, Moctar Sacande met with SNGF, the DIRECTS partner, and helped to set up some research protocols, discussed some data and the overall research programme.

Six more country MoUs (Benin, Ethiopia, Ghana, Madagascar, Malawi, Togo) were countersigned and one original sent back to each respective partner. (NB the Uganda MoU was received at Kew in April 2004)

### **Research, training, and/or technical work**

The selection criteria of trainees included at least two years laboratory experience. However, in order to ensure that at least two staff member per institute were trained and to accommodate the extra interest in the host countries for the Africa-based workshops (i.e. Burkina Faso and Ethiopia), at least one years experience was accepted for some participants.

The research training methodologies used lectures, practicals and group discussions. The theory was supported by lecture handouts (e.g. Powerpoint, 3 slides per page) and copies of published and unpublished papers from the Seed Conservation Department. The practicals were run in small groups, each of which reported back to the whole

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workshop on their findings and interpretations. These contributed to the discussion sessions, although these were not restricted to practical matters. The discussion was wide-ranging and lively, as real experiences were dealt with; some of the issues were introduced during the individual presentations at the start of each workshop. There was also a ‘paper exercise’ on seed quality, requiring calculation of seed vigour rates. Overall the training has been well received and was generally evaluated as being good (c. 4 out of 5). In addition, all the seven individual country Annual Reports received so far mentioned cascaded training to the benefit of technicians, under- and post-graduates (see Table below).

**Table . Summary of partner countries’ activities** (in addition to attending the project workshops)

Country	Signed MoU	Activities/ Species work started	Description	Cascaded Training Using handouts from UK, BF and Ethiopia workshops
Benin	Yes	No report yet		
Botswana		No report yet		
Burkina Faso	Yes	8 species	Germination and storage studies	6 d for 4 technicians (Benin and BF)
Cape Verde		No report yet		
Cote d’Ivoire	Yes	3 species	Development and Germination studies initiated	1x a PhD student
Ethiopia	Yes	No report yet		
Ghana	Yes	No report yet		
Kenya		No report yet		
Madagascar	Yes	6 species	Germination and storage studies; Development studies initiated	
Malawi	Yes	2 species	Germination studies	
Mali		6 species	Collection and development studies initiated	3 d for 2 technicians
Niger	Yes	No report yet		
Nigeria	Yes			10 d for 25 undergraduates 3 d for 10 postgraduates (lecture + practicals)
Tanzania	Yes	1 species	Development studies initiated	14 d – 9 Technicians (field and seed officers)
Togo	Yes	No report yet		
Uganda	Yes(April 04)	No report yet		
<b>Total</b>	<b>12</b>	<b>20 species (excl. 5 overlapping)</b>		<b>36 training-days and 51 people</b>

The reports also provided some initial data of experiments started on seed development, germination and storage for 20 species: *Adansonia digitata*, *Adansonia za*, *Adansonia fony*, *Anogeissus leiocarpus*, *Borassus aethiopum*, *Carapa procera*,

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*Cola nitida*, *Combretum aculeatum*, *Dalbergia melanoxylon*, *Irvingia gabonensis*, *Khaya anthotheca*, *Khaya madagascariensis*, *Parinari curatellifolia*, *Pterocarpus lucens*, *Ricinodendron heudelotii*, *Tamarindus indica*, *Zizyphus mauritiana*, *Combretum nigricans*, *Combretum glutinosum*, *Combretum micranthum*. Three of the species are from the extended list produced during the UK workshop and three added by email exchange and a visit to Madagascar, as Madagascar was unable to attend either of the African workshops.

### **Difficulties**

The draft MoU was felt to need substantial enlarging to incorporate as much information about DIRECTS as possible, i.e. the Log Frame, reporting and financial details, and a clear articulation of the responsibilities of the partners in the network. In relation to this, there have been a number of queries about the wording / phraseology used, particularly from the Francophone countries even though the MoU was accompanied by a short translation in French. However, even though such discussions have been complex, we concluded 12 country MoUs between November 2003 and April 2004. Whilst this has delayed the initiation of the field and lab activities in country, these 5-year agreements have reinforced the notion that a longer-term perspective is needed in-country.

### **Project design**

The basic design is intact, although the target list of species for conservation and sustainable use has been expanded, at the partners' request. In addition, advice from the specialists on the Kew Advisory Committee has persuaded us to attempt to pull the species conservation reports together in a special session associated with the final workshop to the project. This means that the general seed biology information can be packaged as information leaflets (technical papers, as discussed at all three workshops) for regular production and release. Also the delays to the completion of the MoUs had a knock on effect with respect to the transfer of monies overseas, and this made partners, understandably, tentative with respect to their in-country activity plans for Year 1. Consequently, work has been initiated on 20 species but no species seed biology reports have been written. We now propose to write 30 species reports in each of Years 2 and 3, rather than the original plan to produce 15, 30 and 15 reports in Years 1, 2 and 3. The exit strategy with respect to the MSB Project is in place as 8 of the 16 target countries of DIRECTS are MSB Project signatories or target countries. As far as the network is concerned, there seems to be considerable desire to think longer-term and to consolidate the in-country activities, which may be suitable for further DI support.

## Plan for 2004 – 2005 (based on original log frame; new items or changes in italics)

Date (2004-05)	Key milestones
May 04	Presentation at International Seed Testing Association's meeting in Hungary (Storage and Forest Seeds Committees).
<i>June 04</i>	<i>Final review of late arriving country reports</i>
<i>June 04</i>	<i>Project work in Malawi [MSB Project gift-in-kind]</i>
<i>July-August 04</i>	<i>Project work in west Africa (Burkina, Mali, Ghana) [MSB Project gift-in-kind]</i>
Nov 04 (originally scheduled for May 04)	Completed web facility (IPGRI) live for African Tree Seed and Biodiversity Institutes
Mar 05	Submit 3 papers for publication Produce 30 (rather than 15) species research reports

## 6. Partnerships

### Collaborations

The willingness of such a wide range of partner countries to resolve complex issues concerning the MoUs is tremendously encouraging and reveals a serious commitment which we hope to build on in Year 2. On the other hand, the slow / late submission of reports by a number of the partners needs careful monitoring and with a restricted 'activities' budget we may need to invest more heavily in some countries than others.

The development of collaborations with other groups with similar interests has not come to fruition as yet, although discussions have taken place with Prof Patrick DuJardin's plant biotechnology (sustainable use) network (<http://www.bioveg.refer.org>). Their next conference is in Lomé in October 2004. There is a willingness to consider gathering the two networks together at some stage, but money is the bottleneck. We are tracking other initiatives, mainly associated with tree nurseries, e.g. the International Tree Foundation (Uganda, Rwanda) and Tree Aid (UK Forestry NGO working in Burkina, Ghana, Ethiopia). In addition, we plan to speak with CABI Biosciences about the Good Seed Initiative (Kenya, Tanzania, Uganda); although focusing on agricultural seeds, we have a shared interest in the handling of quality seeds to maximise the sustainable use of species and may have knowledge to share.

## 7. Impact and Sustainability

The profile of the project in Burkina Faso and Ethiopia was very high during the workshops and clearly actively promoted wider aspects of biodiversity conservation in country, i.e. not restricted to trees. For example, the Ethiopia workshop was attended by some staff from the national agricultural seed bank. The profile of the project in some of the other countries is not clear, as Annual Reports have not been received. However, the seven country reports received so far have indicated that the training received during the three workshops in 2003 has been cascaded to 51 under- and post-graduates, i.e. on top of the 48 staff directly trained by DIRECTS. Improved capacity for these activities across the countries stands, therefore, at close to 100 people.

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See also the comment earlier about the exit strategy in relation to the MSB Project.

## 8. Post-Project Follow up Activities (max 300 words)

**This section should be completed ONLY if your project is nearing completion (penultimate or final year) and you wish to be considered for Post Project Funding.** *Each year, a small number of Darwin projects will be invited to apply for funding. Selection of these projects will be based on promising project work, reviews to date, and your comments within this section. Further information on this scheme is available from the DEFRA website.*

## 9. Outputs, Outcomes and Dissemination

**Table 1. Project Outputs** (According to Standard Output Measures)

Code No.	Quantity	Target	Description
7	Protocols and handouts (in English and French)	For distribution	Training package including handouts for development studies and protocols for seed handling, germination, storage and data organisation, produced by Drs. Hugh W Pritchard and M. Sacande, both trainers and facilitators of the three workshops (UK, BF, Eth).
15C	UK press releases	Kew Scientist	<b>UK workshop and project launch:-</b> Achieved Oct 2003. In addition, coverage in the Times newspaper (July 03), in SAMARA Newsletter, Press Association / Reuters
15 D	Local UK press National TV	Not specified	East Grinstead Courier (July 03)
18 B (and A?)	Local UK radio	Not specified	British Satellite News (handed to CNN also)
19 C	Press releases	Not specified	BBC Southern Counties, and Southern FM radio
15 A, 18 A, 19 A		All countries	<b>Burkain Faso and Ethiopia workshops:-</b> 4 in 3 national newspapers, 2 national radios and 1 national TV (Burkina Faso); 1 national newspaper (Ethiopia)
4C, 4D,	48 people 3 x 1 week courses	Met Met	48 trainees at the three workshops; 1 week training for each workshop
8	4 weeks total	Exceeded	Pritchard = 2 weeks (BF, Ethiopia); Sacande = 4 weeks (BF, Ethiopia and Madagascar)
11B	1 paper submitted	Exceeded	3 papers submitted
14B	1 presentation	Met	Oral paper given at 17 <sup>th</sup> AETFAT congress in Addis Ababa, Ethiopia
17A	1	Met	Functional network through email exchanges of information between all partners. Very regular email exchange with all partners except Cape Verde, Togo and Uganda where the DIRECTS responsables have changed. <i>The set up of the web facility was delayed and now planned for Year2</i>
10	15	Not met	Work > 15 species initiated but not completed in Year 1. Advised to pull species data together for IUCN-type assessment in Year 3.

## Differences in actual outputs against those agreed

The main successes were the media interest in the countries in which the workshops were held, the training of 48 staff from 15 countries, the extra time spent in-country facilitating understanding of the project and the science, and the commitment to writing short articles introducing the project, which should have an impact from Year 2. Of particular note was the success in overcoming the logistical difficulties of bringing 13 country representatives to the UK, ensuring 9 countries came together in Burkina Faso and 6 countries joined up in Ethiopia. This should have laid the foundations for a functioning African tree seed network over the coming years.

The only target not achieved related to the completion of seed biology work on 15 species. Work has actually started on 20 species, but we have to accept that this would probably be considered to be preliminary for some of these. The slow start was predicted in the half-year report and is a natural consequence of the time taken to conclude the MoUs. But the critical issue this year has been to get the project network up and running. This has been achieved and we are optimistic that the field and lab activities in Year 2 will progress at a much faster rate.

**Table 2: Publications**

Type * (e.g. journal paper, book, manual, CD)	Detail (e.g. title, authors, journal, year, pages)	Publishers (name, city)	Available from (e.g. contact address, email address, website)	Cost £
International Newsletter	Darwin Initiative award boosts research on African Community Tree Seeds. Sacande M. (2003). SAMARA 5: 3.	MSB/RBG Kew, London	www.RBGKew.org.uk/SAMARA/	0
Newsletter	Community tree seeds. Sacande M. (2003). KEW SCIENTIST 24: 4.	RBG Kew, London	www.RBGKew.org.uk/kewscientist/	0
International Newsletter	Forest Seed Research in Mali. Sanogo S, Sacande M. (2004). SAMARA 6: 3.	MSB/RBG Kew	www.RBGKew.org.uk/SAMARA/	0

## Dissemination activities in country

Eight of the 16 target countries are current or prospective partners of the MSB Project and as such will have received the two issues of SAMARA in which DIRECTS has been promoted. There will have been a narrower partner country distribution for Kew Scientist. Opportunities to disseminate through SAMARA will continue when the project finishes. More direct dissemination via articles (press and science) is expected in Year 2, and the web site can be used for this purpose also.

The majority (if not all) of the participants attending the UK workshop were committed to writing a conference report on their return, and five of these were copied to the Project Leaders. We understand that the reports were submitted to the appropriate ministry at the time the request was made to sign the MoU, the report acting as background information. We assume that the seven country reports received so far will be used in a similar way, particularly as most of the partners work in government-supported institutes.

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## 10. Project Expenditure

**Table 3: Project expenditure during the reporting period** (see also the report of Des Bennett [Kew])

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Item	Budget	Expenditure	Remainder for 2003-04
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### Variations compared to the original budget

## 11. Monitoring, Evaluation and Lessons

Building the network and gaining the trust of partners is the bedrock for a successful project of this nature. The high take-up of MoUs (12 countries) and the submission of 7 country Annual Reports, and the reports of cascade training indicate this has been achieved. The successes and weaknesses of the workshops were assessed through the evaluation forms, and the progress of the project as a whole has been monitored and considered twice by colleagues in Kew who sit on the DIRECTS Advisory Team.

The main lesson from this years work has been the need to be patient and cautiously optimistic about arrangements to get the MoUs approved as identifying the appropriate authority is not always obvious. Even now there is some doubt that we will secure the participation of Cape Verde. In addition, we have lowered our expectations of how IPGRI can help in the project as it has become evident that they have other considerable commitments.

## 12. Author(s) / Date

13. Dr Hugh W. Pritchard and Dr Moctar Sacande / 30 April 2004

## Appendix: Logical Framework

Project summary	Measurable indicators	Mean of verification	Important assumptions
<b>Purpose</b>			
To enhance the role and capacity of institutes in the conservation and sustainable use of native tree seeds of community value	New knowledge on seed biology and conservation methods for up to 60 species generated and shared.  Staff conduct collaborative research within the network but also show evidence of independent work  Increased and effective inputs to national conservation policies and conservation agencies.	Methods protocols on seed harvest, treatment, etc. in circulation and use  Information incorporated into tree BAPs, and institutional role acknowledged by government / State in official documents  Seed holdings at institutes expanded to include many of the species.  Annual reports and staff publication lists.	Seed conservation protocols are accepted by all the SAFORGEN and SADC partners as a valuable component of CBD-related conservation action.  Researchers use increased knowledge to guide future programmes.  Institutes commit to find resources to ensure elevated levels of activity.
<b>Outputs</b>			
Increased research base for listed species.  Increased capability of institutes' staff to undertake and promote / disseminate seed research  Increased dialogue between institutes on all aspects relating to tree seeds and conservation targets.	Species' seed conservation reports for c. 60 sp (incl. species distribution information).  Number of species and research reports (literature) produced per institute increased, and c. 6 collaborative papers produced.  48 staff across 16 institutes effectively trained (primarily in country) on seed handling, etc.  Functioning web-based system in place	List of the published papers, conference reports, and the annual reports of the institutes involved  Compare training evaluation questionnaires (pre- and post-event)  Management meetings reports  Review traffic, number of hits on web site. Track enquiries, correspondence, etc.	Trained staff, competent in conducting the appropriate research and cascade training, are not assigned to other duties.  Institutes encourage staff to commit adequate time to writing up the species reports / papers.  In country resources promised are made available / committed and DI resources appropriately used.
<b>Activities</b>			
Training/planning workshop in the UK - Two regional workshops in Africa and final workshop.  In-country research investigation on tree seed conservation techniques  Conduct back-up research and data management (UK)  <i>Web-site and publications</i>	Yr 1: (July 03) UK-based inception workshop to discuss research/training protocols, participants' specific species of interest, administration issues, etc. (August 03) W-Africa training in Burkina Faso (in French). (Sept 03) - Training of E-S African partners in Ethiopia (in English). Yr 3: Final workshop in Kenya (timing to be decided, probably Dec05)  Yr 1: Research on 15 species, data collection, analysis, write species reports. Yr 2: Research 30 species, write reports and 3 multi-authored papers. Yr 3: as Yr 1, plus commit seed to long-term storage as an investment for the future  Yr 1: Compile current baseline data and draft review paper. Yrs 1 -3: Replicate experimental work when necessary and provide advice, i.e. back stop. Yr 3: Help edit proceedings  Yr 1: Plan, design web in consultation with DEFRA, IPGRI and partners. Yr 2: Fully functional web network. Yr 3: Maintenance and continuing use for information flow		