

PARTNERSHIP INITIATIVES INFORMATION SHEET

Name of the Partnership/Initiative:

A network of Spatial Decision Support Systems (SDSS) toward the sustainable use of plant diversity in the SADC Region

Expected date of initiation: 2003

Expected date of completion: 2006

Partners Involved:

Governments: Italy (DGCS), Angola, Botswana, Democratic Republic of Congo, Lesotho, Malawi, Mauritius, Mozambique, Namibia, Seychelles, Swaziland, South Africa, Tanzania, Zambia, Zimbabwe

Intergovernmental organizations: SADC, ICS-UNIDO, IUCN

Major groups: University of Trieste, SADC -FSTCU

Other: Italian National Research Council, International Centre For Theoretical and Applied Ecology, CESVI, AFRICOVER, GEF Southern Africa Biodiversity Support Programme (SABSP), SABONET.

Leading Partner: Italy – DGCS

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Main objectives of the Partnership/Initiative

Background and rationale

Biological diversity is a crucial resource for sustainable development, both in developing and in industrialised countries, where industrial and agricultural pollution trigger major environmental problems and farming systems show both decreasing resilience and lower yielding capacity. It is widely acknowledged that biological diversity, including the tremendous value of the relevant traditional knowledge, is decreasing at an alarming rate, through the actual extinction of animal and plant species, but mostly through the reduction of number of species per unit area of the biosphere. This is mainly due to ecosystem fragmentation produced by the human activities. In many cases existing biological diversity is not properly utilised as a resource for sustainable development due to the lack of appropriate use strategies. However to redress biodiversity use towards sustainability, it is necessary to study it and assess its economic value, and develop a global strategy and a global network to monitor its status in the biosphere.

The SADC region is one of the richest areas in the world in terms of biological diversity and ecological complexity, and vegetation, natural or artificial, constitutes one of the most important renewable resources in the region. The population obtains about 80% of its income from plants (spontaneous or cultivated) both directly (agricultural products, timber, medicines etc.) and indirectly (meat, pelts etc.).

At the same time, SADC countries are equipped with significant botanical collections, gradually built up over the last century. These collections, which unfortunately also deteriorated over time, are a precious heritage of knowledge on biodiversity. On the other hand, their access and use is difficult because of limited amenability of methodology applied, and differences in approaches and languages used. Therefore institutions which are the basic infrastructure for dealing with biological diversity, such as herbaria, parks and natural reserves, as well as germo-plasm banks, face many problems in developing their role and fully become available to offer a service to other potential end-users of biodiversity. Furthermore all regional institutions are dispersing their limited resources in building up general collections, which do not present any comparative added value and do not meet present "market" requirements of national ministries of agriculture, forestry and health, as well as pharmaceutical companies and tourism operators. As a consequence, they depend on scarce governmental financial support, which prevent their potential toward diversification and specialisation on some peculiar aspect of biodiversity use and build up a network of "centres of excellence".

Justification

All SADC countries have signed Agenda 21 and ratified the international Convention on Biological Diversity (CBD). Consistently with these commitments of its partner countries to sustainable development and the conservation of biodiversity, SADC has promoted a series of relevant projects funded by different donors.

During Maputo 1992 annual conference of SADC member countries, a new financial pledge by the Italian Cooperation was announced of US\$ 25,000,000 in favour of projects included in the SADC investment programme, a part of which is specifically aimed at environmental conservation.

Following discussions between Italian and SADC representatives, a number of measures

have been identified which could contribute to tackle regional problem issues, by developing synergies and possibly increasing the positive impact of some current bilateral projects. In this context, a project “Establishment of a Plant Resources Regional Network in the SADC Region: A Service for Environmental Conservation of Biodiversity and for Sustainable Development (SECOSUD I)” was implemented aiming at strengthening the technological and networking capacities of SADC-FSTCU partner institutions responsible for botanical collections. SECOSUD I primary pursuits included the organisation of relevant botanical data in Geographical information Systems (GIS) d-bases to support biodiversity conservation, agriculture and industry development plans, with particular reference to the pharmaceutical sector, and plant material trade development.

The Department of Biology of the University of Trieste was appointed as executing agency to implement the project in close collaboration with SADC and the relevant national institutions in its member countries, together with a number of international and regional scientific/management networks which have been functionally interlinking with the project pursuits.

Objectives

Building upon the above described regional development potentials and institutional consensus of the SADC Secretariat and its member states, the described capacity building and development contribution of the previous DGCS_SADC cooperation project (SECOSUD I) represents a solid foundation for the present partnership initiative.

The general aim of this partnership is to produce and establish a network of management oriented spatial decision support systems (SDSS) to promote the sustainable use of natural resources by private and public stakeholders while ensuring the durable social and economic development of rural areas situated in the SADC region affected by strong growing human pressure. The SDSS will be addressed specifically to Sustainable Management of Biological Resources (SMBR) by promoting the conservation of native plants economically useful compatibly with the long-term equitable economic growth and enhancement of productive capacity in rural areas. The network will comprise informatics tools with nodes located at selected Institutions that will:

- help understand the interactions between economically useful plants and the environment where they spontaneously grow and where they are cultivated,
- provide services to improve plant productivity without compromising the biological diversity of the region.

In pursuing such objectives this partnership initiative will take into particular account indigenous practices and the local knowledge. In this respect it is very urgent to define the scientific basis of local environmental management and crop production models and to develop a scientific framework for interpreting and explain the local knowledge. The project aims enhancing models and strategies in the sectors responsible for the development and distribution of agricultural and natural products by creating permanent links between the scientific SADC institutions dealing with natural resources and environment and administrators at different levels.

SECOSUD I was devoted to improve the scientific and technological capacity of botanical institutions in offering services for sustainable economic use and conservation management of plant resources. Such project introduced in 11 SADC National Herbaria and Botanic

Gardens the GIS technology for capturing and analysing geographic distribution and species uses information.

Consistently with the views pursued by WSSD, the present partnership initiative is addressed to ensure continuity of the process started with the SECOSUD I by stressing the following new specific objectives:

- (i) To provide administrative institutions with a Spatial Decision Support System that will initially be applied to three areas of natural resources considered of high priority for sustainable development in SADC countries, namely:
 - (1) Forestry
 - (2) Rangeland and grassland and
 - (3) Non - timber resources.
- (ii) To link the botanical institutions (herbaria and botanical gardens) to administrative institutions of Government, NGOs and other biodiversity related programmes (funded by different donors) in a network including local stakeholders (e.g. farmers and healers) as producers and/or collectors of natural plant species material.
- (iii) To raise awareness and involvement of other government and non-government agencies and institutions that are potential users of the services that will be provided by institutions hosting botanical collections.
- (iv) To extend the development and capacity building contribution of SECOSUD I by transferring the results obtained in such a project to those SADC countries that did not participate to it (i.e. Democratic Republic of Congo, Mauritius and Seychelles) and thus enable them to be involved in the present new partnership initiative (SECOSUD II).
- (v) To link other existing Regional and International networks and projects adding new value to their contribution to sustainable development in terms of synergetic integration of innovative technology transfer and know-how for capacity building (e.g. SABONET, AFRICOVER, GEF Southern Africa Biodiversity Support Programme (SABSP)).

The present partnership will represent a significant step beyond the current state-of-the art in decision making on natural resources since it will include substantial innovative work and integrate environmental-ecological data with socio-economic data. Both the data will be collected based on scientific criteria and taking into account indigenous knowledge. In this respect the PRA (Participatory Rural Appraisal) techniques will be applied in order to improve the human resources for research at different levels, spanning from field contacts with local people to design specific decision support models at institutional levels. The indigenous knowledge on farming and collecting practices, on the use of natural products (for food, fodder, medicinal use, fibres, construction, craftsmanship, etc.) the biophysical conditions of the environment related to the use of plant diversity will be a specific object of research and a basement for establishing the network of spatial decision support systems. Studies on technology-transfer have illustrated that GIS *per se* cannot solve problems without a consensual definition and application by regional and/or local client groups. Therefore this new partnership will focus on the question of how GIS and Remote Sensing

techniques can support the planning activities for rural sustainable development in synergy with SABONET, AFRICOVER and SABSP. It will add value to those projects because it will extend some of their activities to all the countries (e.g. Tanzania, The Democratic Republic of Congo, Mauritius and Seychelles not included in SABONET) of SADC and will introduce and/or reinforce in such projects the technology related to spatial environmental aspects and especially to the aspects of plant distribution and plant uses that is fundamental for sustainable use of overall natural resources.

The proposal is innovative for at least the three following reasons:

- Development of a service which can be used for different stakeholders and for political and socio-economic decisions at different administrative levels from the village to the country and regional level, thanks to the extension of links between the biodiversity institutions and the administrators achieved with SECOSUD I, to the stakeholders (producers, collectors, entrepreneurs, etc.) and other connected projects on sustainable development in the SADC area.
- Analysis of the ecological niches of economically useful plants using field data combined with environmental and socio-economic information resulting from a PRA approach.
- Application of methods of data acquisition and processing by GIS and remote sensing taking into consideration the local knowledge in a spatial and environmental context, and translation of this knowledge into logical multi-criteria structure.

Relationship with the objectives of Agenda 21 and objectives of the United nation Millennium declaration:

This partnership initiative will contribute to meeting priority objectives of the Millennium Declaration particularly through the support given by its networks to regional planning toward poverty alleviation. Additionally to its specific contributions to the Convention on Biological Diversity (CBD), the partnership is in line with the recommendation of Agenda 21 with particular regard to its sustainable development pursuits.

Expected results

Additional to the long term results deriving from having started networking process, within the partnership life span expected results include:

- (i) An informatic network of Spatial Decision Support System (SDSS) models for forestry, rangeland and grassland and non-timber resources established and institutionally acquired.
- (ii) A number of pilot cases implemented on management decisions taken with the help of the SDSS models on planning and management instances relevant to selected areas of economical interest such as forestry, rangeland and grassland, and non-timber resources, including on trans-boundary/regional issues.
- (iii) Knowledge and experiences gathered through case studies carried out by each

participating country exchanged and shared in the SADC Region.

- (iv) Awareness of administrative institutions and policy decision makers and NGOs on the SDSS models and applications raised to standards functional to their sustainable involvement as users of such model's services.
- (v) Training modules to be applied in relevant programmes of the SADC institutions participating in the SECOSUD II produced.
- (vi) Decision makers Capacity acquired through transfer of knowledge, skills and technology to all the SADC countries.
- (vii) Capacity consolidated of SADC countries in conservation of plant diversity in the Region.
- (viii) An increasing number of services delivered by partner institutions to stakeholders of administrative bodies (ministries, national parks, local government etc.) and the private sector (agro-industry, agriculture, agro-forestry, timber logging, health system, tourism, etc.).

Specific targets of the Partnership/Initiative and timeframe for their achievement

To achieve the objectives and expected outputs listed above, the following targets of the Partnerships are envisaged:

- (i) Design the network and the SDSS models for natural resources management at three selected institutions responsible for coordination of forestry, rangeland and grassland and non-timber resources management.
- (ii) Practical applications to test SDSS models on pilot cases of management problems faced by administrative authorities and decision makers. This will be done by interacting with other Government and NGOs working in the three selected areas.
- (iii) Undertake inventories of plants selected during previous projects (e.g. SECOSUD I) and collect data on their conservation status. Such inventory will be done using modern technologies such as Global Positioning Systems (GPS) to determine the geographical reference of the location of the plants. GIS related information on vegetation, soils, land use practices, geology and rainfall pattern will be collected from different sources.
- (iv) Establish links and find complementary action between SECOSUD II and other projects. The institutions of plant collection will be involved in the monitoring and evaluation of plant diversity in consultation with the GEF Southern Africa Biodiversity Support Programme (SABSP), which is also being coordinated by SADC FSTCU. The project will also establish links with AFRICOVER Project. Synergies with other related projects (e.g. SABONET) and programmes will be explored in order to add value to their activities.

- (v) Raise awareness and promote interaction between Botanical Institutions and other governmental and NGOs, by SECOSUD national Open Days and one Regional Symposium organised in order to demonstrate applications of GIS and SDSS and to exchange know how and experiences of such applications .

The expected timeframe of the project is a three year period which will be mediate by the following milestones:

- a) Coordination meetings between the partners and update the analysis of the capacity of the SADC institutions hosting botanical collections in providing services according to the aims of SECOSUD I. Selection of pilot cases and design of the network of SDSS and design the training program.
- b) 1) Training courses will be jointly organised by SADC FSTCU, ICS-UNIDO and the University of Trieste, Italy. They will cover data base development and management, GIS and SDSS concepts, techniques and applications. 2) Training on the job will be implemented whereby staff from the 14 participating countries will be invited to selected institutions to participate in real and practical applications of SDSS in the three selected areas (forestry, rangeland and grassland and non-timber resources management). These initiative will be organised in Malawi for forestry practice; Botswana for rangeland and grassland management and Mozambique for non-timber resource management.
- c) A general regional meeting will be organised with the aim to present the results achieved during the pilot applications of the SDSS to evaluate and provide the necessary guidelines for the replication of the developed and tested systems elsewhere in the region. This phase will be concluded by a final meeting of the partners with the monitoring committee for evaluating the general project achievements.

Coordination and Implementation mechanism

Please provide a brief description of expected coordination/implementation mechanism of the Partnership/Initiative.

The project's coordination will be undertaken by SADC FSTCU, in strict cooperation with University of Trieste and ICS-UNIDO. Networking activities are the basis for the project coordination. Using the network the organisation of meetings, workshops, visits to the University of Trieste, ICS-UNIDO (International Centre for Science and High Technology in Trieste Italy) and other internationally recognised institutions will be achieved. The Partnership will support one SADC general co-ordinator and three area co-ordinators (Forestry, Rangeland-grassland and non timber products) which will be responsible for implementing all the project activities in the SADC region. Each national partner will consolidate as focal point for a specific set of themes with a view to develop as a centre of excellence for their respective sectors.

Internet based activities will be designed to facilitate information sharing and to publicise the Project.

Arrangements for funding

Please describe available and/or expected sources of funding for the implementation of the Partnership/Initiative (e.g. donor government(s); international organization(s)/financial institution(s); foundation(s); private sector; other major groups, etc.)

The main Donor will be DGCS with an expected contribution of Euro 1.900.000; ICS-UNIDO will offer expertise and structures for organizing training activities and training on the job, complementing the partner countries in kind contributions.

Arrangements for capacity building and technology transfer

Please include information if the Partnership/Initiative provides for training, informational support, institutional strengthening and/or other capacity building measures:

The partnership initiative specifically focus on capacity building and technology transfer. Consistently it will include:

- Procurement of equipment and materials for herbarium improvement for all the SADC Countries as well as development and establishment of the SDSS predictive models, which will be functionally mediated by training on the job and actual applications in national/regional management case studies.
- Networking activities including meetings, workshops, visits to the University of Trieste, International Centre for Science and High Technology in Trieste Italy and other internationally recognised institutions will be organised. Training courses and training on the job will be organised by SDAC FSTCU.
- Internet based activities designed to publicise the Project and facilitate information sharing. Distance learning courses will be implemented.
- ICS UNIDO will ensure effective technology transfer by organising tailor made training courses and demonstration on technologies to be applied in specific case studies jointly identified with partner countries.

Links of Partnership/Initiative with on-going sustainable development activities at the international and/or regional level (if any)

Please provide a brief description:

Links and complementary action between this Partnership initiative and other sustainable development and biodiversity conservation projects will include: the involvement of the herbaria institutions in monitoring and evaluation of plant diversity in consultation with the GEF Southern Africa Biodiversity Support Programme (SABSP), which is also being coordinated by SADC FSTCU. The project will continue to have activities in common with SABONET and will also consolidate links with AFRICOVER Project to toward the identification of relationships between land cover and plant diversity. Synergies with other related projects and programmes will be explored building upon results of the initial phases.

Monitoring Arrangements

Please describe expected arrangements for monitoring of progress in the implementation of Partnerships/Initiative after it will be launched at the WSSD:

An interdisciplinary committee for monitoring the project will be nominated among international specialists in socio-economy, botany and agriculture. Reports on the activities will be prepared by the participants, delivered via e-mail to SADC FSTCU that will prepare the general report at the end of semesters. The Monitoring Committee will monitor project progress also basing on reports on ongoing research activities and results. The publication of news-letter in internet of progress report every six months will keep the attention up on the project and will be an automatic way of monitoring its status. The progress reports will be available to all the partners and the donors. The web page will be available in internet and will contain a section of the ongoing research events.

Other relevant information:

Web-site:

Internetworking of the participating institutions is a key factor for success of the project. Extensive use of the Internet to foster and sustain a continuous connection between the project actors and players is therefore necessary. The project will rely on a web-site that will expand the existing features designed and implemented during SECOSUD I and hosted at <http://secosud.units.it>.

Specifically, the website will address the following set of requirements:

- provide a thorough description of the project objectives, activities, participating institutions and news
- dynamically present the geographic and ancillary contents of the project activities by means of interactive services addressing the key areas of geographic information systems, decision support tools and online digital databases
- feature a set of networking tools such as discussion forums, knowledge bases, downloadable resources and links to provide a constant support to key project issues and to promote the establishment of an interacting scientific community
- foresee a series of distance learning training packages presenting thematic case studies and technical subjects. State of the art technologies will be exploited to both provide the contents and to support the courses attendants

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