THE SUD EXPERT PLANTES DÉVELOPPEMENT DURABLE (SEP2D) PROGRAM, SUPPORTING GLOBAL STRATEGY FOR PLANT CONSERVATION (GSPC) ACHIEVEMENT AND THE AICHI TARGETS

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Abstract

In keeping with the 2011–2020 Strategic Plan adopted by the 10th Meeting of the Conference of the Parties (COP) to the Convention on Biological Diversity (CBD) in Nagoya, Japan, in October 2010, France scaled up its biodiversity action with a new National Biodiversity Strategy (NBS) for 2011–2020. Target 16 aims at strengthening international solidarity and ensuring greater mainstreaming of biodiversity into French development assistance, and target 17 addresses reinforcing green diplomacy and international governance for biodiversity. In this context, France launched in 2015 the Sud Expert Plantes Développement Durable (SEP2D) program, a five-year multilateral program aiming at sustaining the scientific communities in 22 francophone countries in western and central Africa, the Indian Ocean, and Southeast Asia. Focusing on the sustainable management of plant biodiversity, SEP2D is supported by Agence Française de Développement (AFD), the French Global Environment Facility (GEF), and Ministère des Affaires étrangères et du Développement International (MAEDI), as well as other public and private partners among which are the Muséum National d'Histoire Naturelle (MNHN) and the Institut de Recherche pour le Développement (IRD). SEP2D is making every effort to bolster partnerships and collaboration on plant biodiversity, building bridges between research, education, and societal demands. In this regard it encourages the scientific community to work on applied topics, such as the major challenges associated with conservation and tropical plant biodiversity assessment. It advocates the national authorities, public stakeholders, private sector operators, and associations to meet societal demands by developing a culture of public-private partnership and backing vocational training for the green economy job market. The Program Steering Committee includes the institutional funders, southern representatives, and key partners. It relies on a Scientific and Pedagogical Council articulated around four themes: forestry and mines; the valorization of plants for medicinal, cosmetics, and agrobiodiversity purposes; research and collections; and training and awareness. The program and its context, planned actions for research, innovation, training, and transversal activities are presented in this paper.

Key words: Aichi targets, Convention on Biological Diversity, France, Global Strategy for Plant Conservation, Nagoya protocol, plant biodiversity, sustainable development, Sud Expert Plantes Développement Durable.

The Conference of Parties (COP) to the Convention on Biological Diversity (CBD) adopted the new Strategic Plan of the CBD in Nagoya, at its 10th meeting in 2010. It urged Parties to improve, transfer, apply, and widely share scientific knowledge and technologies associated with biodiversity, together with its values, its operating mechanisms, its current state, its trends, and the impacts of its depletion by the year 2020. The Sud Expert Plantes Développement Durable (SEP2D) program is a multilateral development and cooperation program focusing on the sustainable management of plant biodiversity. SEP2D is a direct answer of the French authorities, funding agencies, and institutions to implement the international call for capacity-building initiatives (Convention on Biological Diversity, 2010). It is also a response to the needs and expectations expressed by the scientific communities in the target countries. These communities need funds in order to support projects that would allow them to both strengthen their skills and expertise while improving their recognition at the international level. SEP2D was officially launched at the European Botanic Gardens Congress, which was held in Paris in July 2015 (Delmas, 2015). The representatives of partner institutions signed an agreement engaging them until 2020 to promote research, innovation, training, and policy advice for the benefit of the sustainability of plant biodiversity. Thereupon, SEP2D is especially aiming at:

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Table 1. SEP actions supporting botanists.

Event	Location and date	SEP-supported participation
AETFAT	Yaoundé, Cameroon, 2007, 18th congress	335 botanists from western Africa, central Africa, and the Indian Ocean
	Antananarivo, Madagascar, 2010, 19th congress	380 participants
International symposium on the *Flore du Cambodge, du Laos et du Viêtnam*	Phnom Penh, Cambodia, 2008, 1st symposium	350 participants from more than 20 countries
	Hanoi, Vietnam, 2010, 2nd symposium	200 participants from ca. 10 Asian countries

- Strengthening partnerships and collaboration among the different segments of society on plant biodiversity by building bridges between research, education, and societal demands.
- Moving toward more sustainable modes of exploitation and valorization of plant biodiversity in line with the strategic guidelines of the CBD (2010).
- Improving public policies and private sector interventions in the field of biodiversity management by intensifying the use of scientific expertise.
- Engaging the scientific community to work on applied topics, such as the major global challenges associated with the assessment and the conservation of plant biodiversity in the intertropical belt.
- Encouraging the national authorities and stakeholders from the public, private, and voluntary sectors to meet societal demands by developing a culture of public-private partnership and supporting vocational training toward the green economy.
- Enabling the target countries in the Global South to defend their interests in international conventions.

The Legacy of Sud Expert Plantes (SEP)

The current program inherits from a first phase that covered the 2006–2011 period, Sud Expert Plantes (SEP). SEP was an initiative supported by the French government to help countries in the intertropical belt to document plant biodiversity and better understand it in order to manage it sustainably. The budget was provided by the Ministry of Foreign Affairs for the priority solidarity zone countries (Zone de Solidarité Prioritaire, or ZSP). SEP has provided support to scientific communities in 22 countries in four regions: western Africa (Benin, Burkina Faso, Ivory Coast, Guinea, Mali, Mauritania, Niger, Senegal, Togo), central Africa (Burundi, Cameroon, Central African Republic, Chad, Congo, Democratic Republic of the Congo, Gabon, Rwanda), the Indian Ocean (Comoros, Madagascar), and Southeast Asia (Cambodia, Laos, Vietnam). The SEP program intended to fund actions that were built on existing capacities and were led by and with the scientists in the Global South. These actions were integrated within the work of several international networks, such as the Global Biodiversity Information Facility (GBIF), UNESCO, and the Agence Universitaire de la Francophonie (AUF). The SEP program was organized in four work packages:

- Supporting the networks of botanists at seminars, workshops, and regional conferences.
- Supporting herbaria, botanic gardens, and other collection-oriented institutions.
- Supporting research projects on plant biodiversity on competitive funds.
- Supporting the training of future professionals in the management, conservation, and enhancement of biodiversity.

Supporting the networks of botanists at seminars, workshops, and regional conferences

This work package was aimed at bringing support to networks of botanists at seminars, workshops, and regional conferences. The list of plant taxonomy conferences (Table 1) were supported in Africa and Southeast Asia by SEP to stimulate North-South collaboration in the study of the tropical flora.

The Congress of the Association for the Taxonomic Study of the Flora of Tropical Africa (AETFAT) is a major event that gathers botanists studying the vegetation and the taxonomy of the wild plant and fungal species of tropical Africa. These meetings are held every three years, and two conferences of the AETFAT occurred over the vesting period of SEP. It was organized in a French-speaking country in 2007 (for the first time in 50 years).

The historical *Flore générale de l'Indochine*, started in 1907, ceased publication in 1951, and in 1960 it was revived as *Flore du Cambodge, du Laos et du Viêtnam*, a multivolume flora describing the vascular plants of former Indochina (Aubréville & Leroy, 1960). Since 2013, the series is jointly co-published by the Muséum National d'Histoire Naturelle (MNHN) and the Royal Botanic Garden Edinburgh. The first international symposium on the *Flore du Cambodge, du Laos et du Viêtnam* was organized jointly by the MNHN and the Royal University of Phnom Penh. The second symposium was co-organized by the MNHN,

Table 2. SEP actions supporting collections.

Initiatives	Results
Funding of 18 herbaria and botanic garden projects: seven in central Africa; four in western Africa; four in Southeast Asia; three in the Indian Ocean.	660,000 specimens were mounted, protected from the attacks of insects and fungi, properly labeled, identified, and integrated into databases. One third (190,000) of these were digitized. Research projects contributed to the enrichment of many herbaria, e.g., extension of botanic garden in Tzimbazaza, Madagascar, specifically devoted to medicinal plants; strengthening and modernizing of the botanic garden of Lomé in Togo.
Creation of national herbaria	Comoros, May 2010; Cambodia, March 2011; Laos, July 2011
Additional support to collections' consolidation	Physical repatriation of several hundreds of double specimens from MNHN to the national herbaria of Laos, Cambodia, and Vietnam

the Institute of Ecology and Biological Resources, and the Vietnam Academy of Science and Technology. Under the aegis of SEP, experts from the South received financial support to participate in regional and international meetings, including the Subsidiary Body on Scientific, Technical and Technological Advice (SBSTTA) meeting in 2007 in Paris, COP 10 of CBD, the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES), etc. The revitalization of the regional networks of botanists played an important role in the scientific animation of various projects and promoted South-South and North-South collaboration.

SUPPORTING HERBARIA, BOTANIC GARDENS, AND OTHER COLLECTION-ORIENTED INSTITUTIONS

This second component of SEP helped the creation or the revival of national herbaria. These structures have benefited from renewed recognition at national and international levels. The funding operations improved the conditions of conservation and management of herbarium collections, helping institutions to train staff, acquire new equipment for processing and storing samples, develop contacts between international partners and herbaria (museums, botanic gardens, GBIF), create national collections, and increase access to information (Table 2).

These operations have greatly contributed to the creation of research tools that have been used for expertise in the field of conservation and sustainable development of biodiversity and for decision making on or assessments of climate change and its impacts on biodiversity.

SUPPORTING RESEARCH PROJECTS ON PLANT BIODIVERSITY ON COMPETITIVE FUNDS

Research projects granted on a competitive funding basis were carried out by scientists from the South on priority issues (Table 3). They have improved the state of knowledge on national biological heritage and helped promote South-South and regional interdisciplinary collaborations.

SUPPORTING THE TRAINING OF FUTURE PROFESSIONALS IN THE MANAGEMENT, CONSERVATION, AND ENHANCEMENT OF BIODIVERSITY

The training of the future professionals in the management, conservation, and enhancement of

Table 3. SEP actions supporting research projects.

Initiatives	Projects by geography	Results
31 projects were financed by SEP, representing five categories: floristic inventories and tools to help identification (27%); taxonomic revisions (13%); biological knowledge (27%); preservation of species (23%); customs and laws (10%)	9 in central Africa 7 in western Africa 9 in the Indian Ocean 6 in Southeast Asia	82 articles in scientific journals, 39 in journals indexed by ISI 9 book chapters, 9 books 16 doctoral theses 71 master's theses 8 maps and CD-ROMs 52 oral presentations (and posters) at conferences, mostly international

Table 4. SEP actions supporting capacity building.

Creation of the International Master's course on tropical plant biodiversity and environments (BVT-BEVT)	
Presentation of two of the major database management systems for collections, Ho Chi Minh Ville, August 2009 (20 regional participants): RIHA system (Africa Computer Network Herbaria) and BRAHMS Oxford system software	
FURTHER INITIATIVES	RESULTS (FIGURES)
Training of trainers (field schools and seminars)	43 trainers from 15 countries trained in key disciplines of plant biodiversity
National seminars conducted in five countries on the involvement of stakeholders, suppliers, and users; issues of primary data on biodiversity; and implementation of national biodiversity networks	SEP-CEPDEC* raised awareness in 22 countries Nearly 200 people trained in purpose, techniques, and applications of GBIF Four new countries joined the GBIF programs (Congo, Central African Republic, Mauritania, Togo) The national biodiversity network established in the five initial countries, with their GBIF national node operational Signature by the holders of data of a Memorandum of Understanding with the GBIF national node on data connection to the GBIF portal
Support provided to the GBIF Secretariat via the SEP-CEPDEC to help the deployment of GBIF programs in the South	Four working programs: implementation of national biodiversity network around the GBIF national node; analysis of primary data needs of the species; identification of the primary sources of data on biodiversity; connecting > 5000 records to the GBIF portal More than 150 participants were trained in 22 countries and four new member countries joined GBIF: Burkina Faso, Congo, Guinea, and Madagascar
Technical trainings on renovation and management of herbaria; plant inventories, botanical nomenclature, and para-taxonomy; and computerization of collections	Four sessions were held: Dakar in June 2008; Brazzaville in November 2008; Ho Chi Minh City in August 2009; Kinshasa in December 2010. Approximately 20 participants per session were involved in the management and computerization of herbarium collections.

* Capacity Enhancement Programme for Developing Countries.

biodiversity involved the creation of diploma courses, the organization of technical courses, and the training of the trainers (Table 4). The creation of the International Master's course on tropical plant biodiversity and environments, Biodiversité Végétale Tropicale–Biodiversité et Environnements Végétaux Tropicaux (BVT-BEVT) (SEP "flagship"), produced new partnerships between universities from the Global North and the Global South. It aimed at offering training on tropical plant biodiversity, covering most of the disciplines, with mixed classes of student from the Global South and the Global North (predominantly South), a balanced educational team South and North, a curriculum with alternating semesters, and the involvement of the major French institutions and the four Global regions.

An Interim Period of Preparation and Drafting (2012–2015)

A long interim period (2012–2015) helped to identify key milestones and funding partners for SEP's next stage. In June 2012, 50 institutions participated in a seminar co-hosted by UNESCO and the French GEF in Paris. This meeting was focused on SEP reviewing and reflection on how to develop a new phase. It gathered ca. 80 participants, half from the ZSP countries. To help prioritize future support and adapt interventions to national circumstances, it was decided to launch country-based preliminary studies that would retrieve information on national biodiversity management and study what job opportunities the program should help secure. It was decided for SEP2D to retain the same geographical coverage (22 countries) as in the first phase. The four work packages of SEP were also maintained: networks, collection, fundamental research, and training. This configuration was complemented by two new work packages: (1) supporting applied research for the management and sustainable use of plant biodiversity and (2) supporting the involvement of scientists in policy making (national actions and international negotiations).

The Current Sud Expert Plantes Développement Durable (SEP2D) Program: Targets, Specific Objectives, and Implementation

The implementation of the new phase started in July 2015. With an emphasis on the contribution to the Aichi targets and the Global Strategy for Plant Conservation (GSPC) it accommodates both the need to ensure fair benefits redistribution and the global urge to ensure the sustainability of plant biodiversity. This programming is especially aiming at addressing the underlying causes of biodiversity loss by mainstreaming biodiversity across government and society; reducing the direct pressures on biodiversity; promoting its sustainable use; improving the status of biodiversity by safeguarding ecosystems, species, and genetic diversity; ensuring the benefits to all from biodiversity and ecosystem services; and supporting the implementation through participatory planning, knowledge management, and capacity building. In this respect, the general objective of SEP2D is to improve public policies and private sector activities in the domain of the conservation of plant biodiversity, its sustainable management, and use by increasing their reliance on scientific expertise.

targets

The central focus of SEP2D is to attain four specific objectives (outlined in the next section) for plant biodiversity in the intertropical belt, which would be achieved through the following six targets:

- Capacity building in developing countries, in line with the employment market and the green economy.
- Intensifying the use of scientific expertise for biodiversity management.
- Supporting the development of knowledge and conservation of plant biodiversity and its sustainable maintenance.
- Focusing on sustainable modes of production and valorization of plant biodiversity with the private sector.
- Strengthening links between scientists and political actors for improving public policies.
- Allowing countries to advocate their interests and weigh in on international decisions.

specific objectives

SO1: Developing a culture of partnership between scientists and economic operators in order to reduce the impacts of extractive activities and foster the valorization of the biodiversity. The backbone of this objective, derived from the third strategic phase established during the interim period, is to address the identified need to sustainably manage forests in relation to climate change and to mitigate the impacts due to mining activities by a better use and valorization of scientific expertise.

SO2: Build capacities and means of research teams in the Global South target countries for the purpose of developing a better sustainable management of species and habitats. Adapted from the second strategic phase, this objective will be aligned with the national research strategies. Furthermore, it will promote the development of synergies among the regional research agendas with a special focus on important plants areas and protected areas. It also includes support for the activities of collections with a focus on conservation and biodiversity assessments.

SO3: Assist national public policy actors by relying on regional initiatives in order to align them with major international agendas. The sensitization of political leaders on the issues of plant biodiversity is a key challenge of this objective and of the SEP2D program in general. This will be assured by comprehensive and intensive communication on the issues of plant biodiversity, alongside the active participation of scientists in decision making and negotiation processes.

SO4: Provide the program with the appropriate governance system in order to optimize the technical and financial management of the project and its evolution over time. Compliance with this objective, based on the first strategic phase, would help to ensure good monitoring of the project.

These specific objectives will be explored through various program components, and most of them will be achieved through specific calls for projects, with the SO4 ensuring their successful follow-up (Appendix 1).

implementation

A budget of € 5.3 million has been donated by Agence Française de Développement (AFD), Fonds Français pour l'environnement Mondial (FFEM), Ministère des Affaires étrangères et du Développement International (MAEDI), and other public and private partners (Appendix 2). Around two thirds of this funding is immediately available for the program to be used as it sees fit, while the remainder has been earmarked for specific initiatives. Other in-kind contributions amount to ca. 52 full-time equivalent employees in total over five years. This funding is spread over the different SOs mentioned above. This budget is distributed over the five-year duration of SEP2D for the 22 countries. Mobilizing additional funding through public and/or private partnerships will be crucial for the success of the program (Fig. 1).

Conclusion

In this globalized and finite world, the involvement of the private sector, the political courage of our leaders,

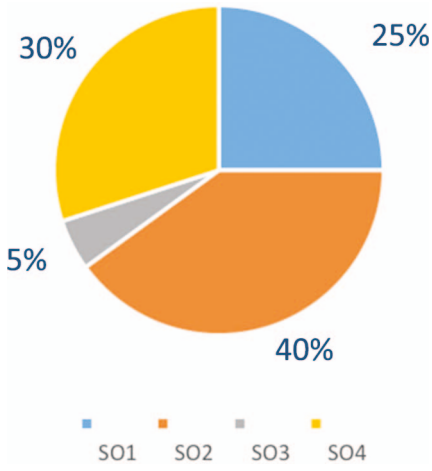

Figure 1. SEP2D budget per Specific Objectives (%/SO).

the persistence of scientists and their willingness to develop innovative partnerships, together with the awareness of the general public will play a crucial role for our environment's and our own sustainability. At its international, Global South–oriented scale, the SEP2D program is addressing various key components of the issues of current plant biodiversity threats, in full line with the CBD Strategic Plan for biodiversity and the GSPC. But however open this new phase is toward the private sector, relying on the market as the central leverage for economic development will be essential but far from sufficient. SEP2D will lay milestones towards innovative co-creation by developing partnerships between various spheres and cultures and reconciling diverse approaches to understand the environment. Thus, the program will rely on the involvement of every stakeholder accountable to these precious resources and, as such, it aims to conciliate environmental conservation, economic development, and the valuation of scientific expertise in order to help political decision making. From a wider perspective, the SEP2D program is both aiming to optimize international rules and the global market to leverage the utmost-needed sustainable development in the Global South. Notwithstanding the bridges that the program is willing to initiate between the various spheres of our current globalized world, much effort from every party will be needed, to build a future in balance between Man and Nature, and it will only be achievable with the listening and consideration of every respective party.

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Appendix 1. SEP2D program components.

Operational Research

The Opérations Pilotes en Partenariat (OPP) and the Projets de Recherche Prioritaires (PRP) are distinguished by their operational or academic nature. The goal of sustaining biodiversity management was set to be achieved through the OPP, establishing public-private partnerships. These projects are seeking to foster partnerships between the research institutions in the Global South and the economic operators (commercial partners and/or NGOs) preferably in the South in response to an operational requirement. The OPP must have four mandatory components: research, application, training, and dissemination of results. They must include the achievement of innovations with the potential for economic development and comply with conventions, which emphasizes the respect for Access and Benefit Sharing (ABS) procedures.

Academic Research

The promotion of research on plant biodiversity will be pursued by the PRP. These projects are aiming to support the development of research on prioritized research themes in the academic field. The focus will be on research on the priority issues in mining, forestry, and valorization of plant resources. In addition, the characterization of plant biodiversity (taxonomy, genetics, etc.) will also be supported through these projects. In order to leverage regional projects, preference would be given to projects that could pool research resources from different countries and ensure transferability at the sub-regional or regional level (South-South regional collaboration).

Teaching

The capacity building will be explored by further supporting existing trainings and implementing new courses, in line with the green economy employment market through scholarships, new courses, and agreements between universities. The targeted training will be academic and professional, initial and vocational, degree or non-degree, field school type and teacher training. A special focus will be put on online courses for a wider access for students to specialties unavailable in the Global South. For both the OPP and the PRP, training modules will also be integrated in the framework.

Botanical Collections and Gardens

This element will provide the necessary support for enhancing taxonomic knowledge and increasing public awareness. This will be done by launching funding calls for facilities, collections, data recording (GBIF); improving herbarium infrastructures, participation in the global inventory effort, and knowledge-sharing of plant biodiversity; completing the digitization of herbarium collections; supporting botanic gardens' biodiversity conservation programs; and offering opportunities to educate the public.

Advocacy

Public policies will be supported through the promotion of scientific expertise and the sensitization of politicians on the national and international issues of plant conservation and valorization. This element of SEP2D will be developed by the sharing of experience and self-training on scientific expertise and policy advice, by the support and improvement of national and sectoral policies on plant biodiversity, and by the publicizing of SEP2D among relevant ministries, with updates on its progress.

Cross-disciplinary Activities

Coordinate and promote public-private research collaboration on biodiversity; create networks to nurture research and action and public-private sector partnerships; contribute to awareness raising; encourage and sustain networking; support workshops, conferences, participation in CBD meeting; offer technical support; encourage and facilitate the emergence of South-South initiatives; and promote the use of scientific expertise.

Appendix 2. Funders, executive teams, and governing bodies.

This new program is co-funded by Fonds Français pour l'environnement Mondial (FFEM), Agence Française de Développement (AFD), Muséum National d'Histoire Naturelle (MNHN), Ministère des Affaires étrangères et du Développement International (MAEDI), and Institut de Recherche pour le Développement (IRD). The IRD is in charge of the program management.

The executive team of Sud Expert Plantes Développement Durable (SEP2D) consists of Stéphanie ARDILA-CHAUVET, Executive Secretary, stephanie.chauvet@ird.fr; Jean-Pierre PROFIZI, Field Technical Officer (Assistant technique mobilisateur scientifique et technique), jean-pierre.profizi@ird.fr; and Anshuman RANA, Private Partnership Officer (Assistant technique valorisation et partenariats), anshuman.rana@ird.fr. They are backed by the Regional Focal Points in central Africa, western Africa, the Indian Ocean, and Southeast Asia, mainly composed of a gender-paired duo of senior and junior scientist coordinators.

The governing bodies are comprised of the Steering Committee, consisting of the program main partners and sponsors, and a Scientific and Pedagogical Council structured around four themes: forests and mines; medicinal drugs, cosmetics, and agrobiodiversity; research and collections; and training and awareness raising with North and South representatives, permanent members, representatives of the major funding partners, and permanent experts. Both the Steering Committee and the Scientific and Pedagogical Council are composed of representatives from the Global North and the Global South.