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**EXTRACT FROM THE PROGRAMME EVALUATION REPORT, 1994-95.
CHAPTER 1: CONSERVATION AND MANAGEMENT OF
PLANT GENETIC RESOURCES (SUB-PROGRAMME 2.1.2.1) AND
ANIMAL GENETIC RESOURCES (SUB-PROGRAMME 2.1.3.3)**



CHAPTER 1
CONSERVATION AND MANAGEMENT OF PLANT GENETIC RESOURCES
(SUB-PROGRAMME 2.1.2.1)
AND
ANIMAL GENETIC RESOURCES
(SUB-PROGRAMME 2.1.3.3)

CONTEXT

1. In the agricultural community, there is serious concern about increased genetic uniformity and loss of genetic diversity in our major agricultural crops and domesticated animals. Quite different from the better-publicized case of the loss of genetic diversity in the world's tropical forests, which is caused mainly by physical destruction and degradation of tropical forest areas, agricultural genetic diversity is threatened primarily by a process of replacement of traditional heterogeneous plant and animal "landraces" by uniform, modern high-yielding plant varieties and animal breeds. Plant genetic diversity, in particular, is furthermore threatened by the loss of wild crop relatives due to the expansion of agriculture, new cultivation techniques and environmental degradation.

2. The increased awareness of the importance of genetic diversity has led to a search for the best systems for conservation, collection and utilization of plant and animal genes, the terms of access to genetic material, and the sharing of benefits derived from genetic material. FAO, with its work on genetic resources dating back to its beginnings in 1947, was an obvious forum for the international discussion of these questions. Already in the 1960s, an Expert Panel on Crop Genetic Resources was convened and a First Technical Conference on Plant Genetic Resources (PGR) organized. During the same period, a specific Crop Ecology and Genetic Resources Unit in FAO was created and the field programme expanded. In 1967, FAO undertook a study on the Evaluation, Utilization and Conservation of Animal Genetic Resources (AnGR) and has conducted since 1973, in collaboration with member countries, several studies to pave the way for a concerted global effort for the conservation of AnGR.

3. In 1974, FAO supported the formation and development of the International Board for Plant Genetic Resources (IBPGR) and became its institutional host and co-sponsor. With UNEP, a series of joint expert panel meetings and technical consultations on AnGR conservation and management were held in the 1980s. Acting on the recommendations of its member countries, FAO began in 1983 the development of a Global System for the Conservation and Utilization of PGR in cooperation with Governments and NGOs, initially by creating a Commission on PGR which drafted and adopted the (non-binding) International Undertaking on PGR. Public awareness was also raised by making Harvesting Nature's Diversity, the motto for the 1993 World Food Day.

4. In recent years, FAO has actively participated in the development of documents for the UNCED conference (in particular Agenda 21) and the Convention on Biological Diversity (CBD). For more than a decade, there has been extensive collaboration with the CGIAR Centres, Unesco, UNIDO, UNDP and UNEP on issues related to the conservation and utilization of genetic resources.

5. Currently, new initiatives are being taken by FAO to foster international collaboration on agricultural genetic diversity. The International Undertaking on PGR is being revised so as to harmonize with the relevant provisions of the CBD, and a Fourth International Technical Conference for PGR will be held in Germany in 1996, to discuss a costed Global Plan of Action for PGR. For AnGR, a Global Strategy is being proposed to provide an international framework for AnGR activities, including the development of programmes to improve the listing, monitoring, conservation, use and development of potentially endangered livestock species.

6. Most activities concerning genetic resource conservation and use take place in two Sub-programmes: 2.1.2.1 Conservation and Management of Plant Genetic Resources, and 2.1.3.3 Animal Genetic Resources. Both Sub-programmes have had, compared to previous levels, substantial increases in their budget allocations for the 1994-95 biennium. Together, they have received approximately 58 percent of FAO's total allocation to genetic resources activities (US\$7.2 million). As the Sub-programmes are largely independent of one another, they will be, in the main, reviewed separately. Other relevant Sub-programmes will be referred to in the appropriate context.

OBJECTIVES AND PRIORITIES

7. FAO's general mandate in the field of genetic resources is laid down in the Organization's constitution (Article 1, paragraph 2c, charges FAO "to promote ... national and international action for the conservation of natural resources and the adoption of improved methods of agricultural production"). Specific initiatives concerning genetic resources have consistently been requested and endorsed by the Organization's Governing Bodies. Important landmarks in this respect are the approval of the International Undertaking on Plant Genetic Resources by the 1983 FAO Conference, and in the recent past the establishment of two Special Action Programmes, one on the Conservation, Use and Development of PGR, and another on the Conservation, Use and Development of AnGR, welcomed by the 1993 FAO Conference.

8. In general terms, FAO's objectives related to biological diversity for food and agriculture can be stated as the promotion of the effective conservation, scientific study, and sustainable utilization of biological resources in ways that benefit people throughout the world, particularly in developing countries. To this end, the Organization (i) collects, interprets and disseminates information on biological diversity, (ii) facilitates the development of guidelines for its conservation and use, (iii) provides direct assistance to member countries, and (iv) fosters international collaboration through development of international codes, instruments, etc, as well as through direct cooperation with other agencies in various international conventions and activities (e.g. technical and administrative support to the Secretariat for CBD).

9. FAO's priorities in these fields stress policy development, information exchange and international collaboration. The Sub-programmes are accordingly geared towards three main objectives:

- a) mobilizing political and financial support required to assure that crops and domestic animals are part of global, regional and national plans and strategies for biological diversity;

- b) promotion and facilitation of international cooperation to support regional and national programmes; and
- c) raising public awareness through publications, and provision of fora for information exchanges, so as to foster a broader understanding of the importance of plant and animal genetic diversity, and its sustainable management.

10. Following the recommendations of the 1983 FAO Conference, Sub-programme 2.1.2.1 played a pioneering role towards the attainment of these main objectives by giving priority to the creation of a formal international structure for work on PGR, emphasizing in particular:

- a) the Commission on Plant Genetic Resources (CPGR) as an inter-governmental forum for the development of policies and provision of guidance;
- b) the International Undertaking on Plant Genetic Resources;
- c) the World Information and Early Warning System for the collection, analysis and dissemination of data;
- d) international networks, e.g. the FAO International Network of *Ex Situ* Plant Germplasm Collections; and
- e) the International Code of Conduct for Plant Germplasm Collecting and Transfer.

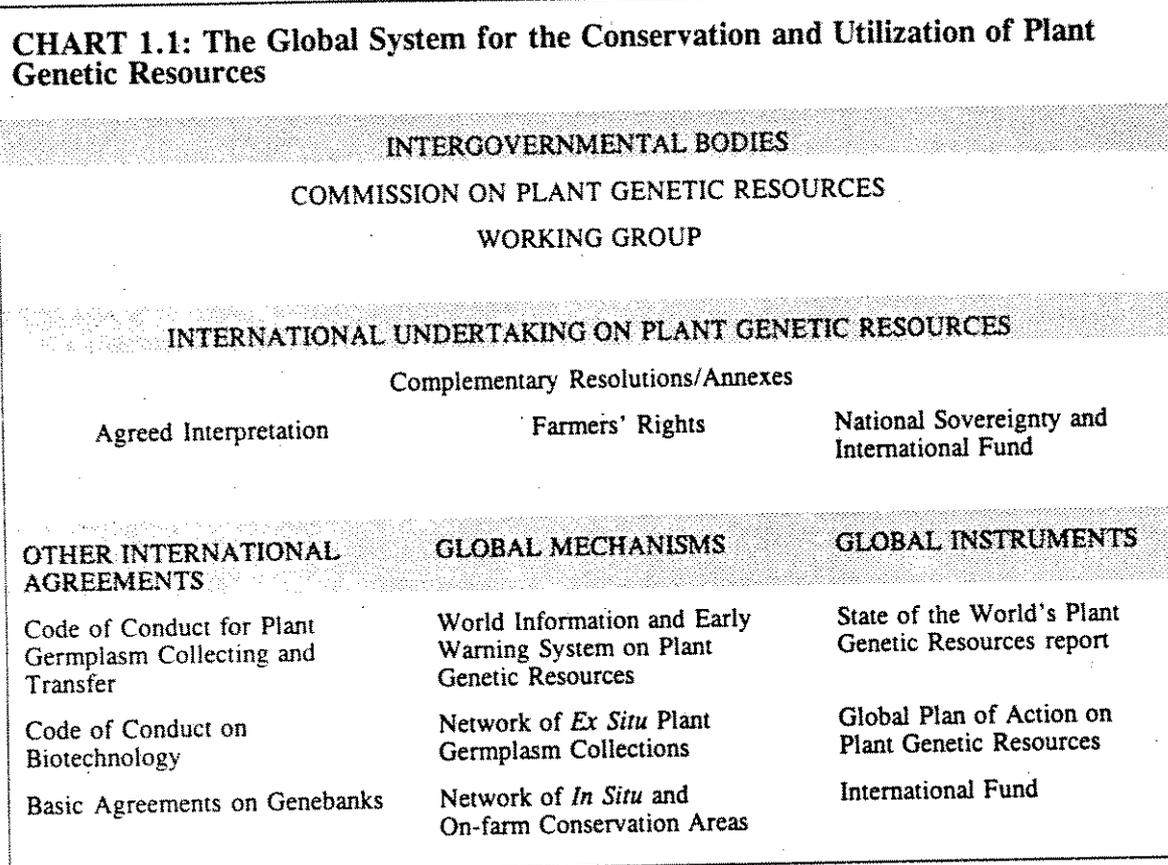
11. The above components are parts of what has come to be known as the Global System for the Conservation and Utilization of Plant Genetic Resources for Food and Agriculture (see Chart 1.1). In addition to the components listed above, the following elements are under development:

- Code of Conduct for Biotechnology;
- Network of *In Situ* PGR Conservation Areas;
- State of the World's Plant Genetic Resources report;
- International Fund for Plant Genetic Resources; and
- rolling Global Plan of Action on PGR.

12. Sub-programme 2.1.3.3 was charged specifically with the preparation of a programme for the sustainable development of AnGR on a global level by the Ninety-eighth Session of the Council in 1990. Since then, precedence has been given to formulating a Global Strategy, to include:

- a) an intergovernmental mechanism, enabling direct government involvement;
- b) a geographically distributed structure, to assist and coordinate the activities of individual countries;

- c) a programme of activities, encompassing, among others, an information system, *in situ* and *ex situ* conservation strategies, guidelines and international instruments; and
- d) an advisory board of experts.



13. Core elements of the Global System are the CPGR, which provides a forum where countries - as donors and users of germplasm - can discuss and reach consensus on matters related to PGR, and the Undertaking, a non-binding agreement to ensure that PGR, especially species of present or future relevance for food and agriculture, are explored, collected, conserved, evaluated, utilized and made available for plant breeding and other scientific purposes.

14. For both Sub-programmes, emphasis has clearly been on normative and conceptual aspects of genetic resources rather than on direct technical assistance to countries via projects. Much of the Sub-programmes' work, and in particular the support provided under Sub-programme 2.1.2.1 to the Secretariat to the Commission on PGR, is defined through a country-driven process. In other words, work plans are dependent on member countries' initiatives and priorities, and progress is more often than not conditioned by factors beyond the control of the Organization.

15. Concrete Targets against which the Sub-programmes' work progress could be measured have not always been explicitly stated in the Organization's Programme of Work and Budget (PWB). However, in the case of Sub-programme 2.1.2.1 some indications have

come from the deliberations of the Commission on Plant Genetic Resources. Suggestions made by the Commission often had the character of broad recommendations (e.g. to support manpower training in plant breeding and seed production), but also tended to give clear directions for future work (e.g. the first session of the CPGR recommended the setting up of an international network of protected areas). However, these recommendations and directions were only rarely reflected in the respective chapter of the PWB. One apparent reason is that CPGR sessions take place in March or April of a Conference year, by which time the preparation of the PWB is too far advanced to take account of the results of the CPGR session.

ORGANIZATION AND RESOURCES

A. Organization

16. Both Sub-programmes are located in the Agriculture Department, within the Plant Production and Protection Division and the Animal Production and Health Division, respectively.

17. The first unit specifically devoted to PGR work within the Organization was the Crop Ecology and Genetic Resources Unit established in 1968, which at the time was acclaimed for its international campaign for the conservation and development of PGR. This period saw also an expanded PGR field programme. From the mid-1970s until the separation of IBPGR¹ from FAO in the 1990-91 biennium, work on PGR was unified within the Crop Genetic Resources Centre, which constituted a separate service under the Plant Production and Protection Division. In the 1990-91 biennium, PGR work was combined with seed activities in the Seed and Plant Genetic Resources Service, which covers two Sub-programmes (2.1.2.1 and 2.1.2.3). PGR work is being done by two distinct units in the Service: the Secretariat to the CPGR, and the Plant Genetic Resources Group. Following the request of the 1991 FAO Conference, the Seed Information System is being integrated into the World Information and Early Warning System on PGR, while the Seed Laboratory is being re-organized as the Plant Genetic Resources Information and Seed Exchange Unit.

18. A recent, temporary, addition to the work of the Sub-programme is the Conference Secretariat for the Fourth International Technical Conference for PGR, which is organized as a Trust Fund project (International Conference and Programme for Plant Genetic Resources - ICPPGR) attached to FAO's Plant Production and Protection Division. Preparations for the International Technical Conference take place under the guidance of the CPGR and its Working Group, and the Conference Secretariat is to be advised and guided by an independent Expert Group (representing regional as well as scientific, institutional, NGO and corporate interests), an *ad hoc* steering committee, and an internal FAO Task Force. Other Sub-programmes within the Crops Programme as a rule often have appreciable PGR elements, mainly on genetic resources utilization. Prominent in this regard are Sub-programme 2.1.2.2 Crop Management and Diversification, particularly concerning the technical backstopping of field projects, and to a lesser extent Sub-programme 2.1.2.4 Crop Protection.

19. Sub-programme 2.1.3.3 is implemented by the Animal Genetic Resources Group within the Animal Production Service. The Group's work is complemented, on a part-time

¹ In 1994, IBPGR became the International Plant Genetic Resources Institute (IPGRI), an autonomous institution within the CGIAR. In the following, IBPGR and IPGRI are sometimes used synonymously.

basis, by Animal Production and Health officers stationed in all four Regional Offices as well as by some consultant services and an Associate Professional Officer.

20. In addition to the work of the Sub-programmes, there are other activities related to the conservation and utilization of genetic resources within the Organization. In short, these are: Major Programme 1.3 Legal (e.g. activities in this regard: development of the International Network of Gene Banks for PGR, implications of the CBD for the International Undertaking on Plant Genetic Resources, revision of the International Undertaking, development of Codes of Conduct for Collectors of Plant Germplasm and for Biotechnology); Sub-programme 2.1.3.1 Grassland, Forage and Feed Resources; Sub-programme 2.1.4.1 Research Development and Sub-programme 2.1.4.2 Agricultural Applications of Isotopes and Biotechnology; Sub-programme 2.2.2.2 Inland Resources, Aquaculture and Environment; Sub-programme 2.3.1.1 Development and Management of Forests, Sub-programme 2.3.1.2 Tree Planting and Forest Reproductive Materials, and Sub-programme 2.3.1.3 Conservation and Wildlife.

21. A common link with other units within FAO regarding biodiversity exists through the Inter-departmental Working Group on Environment and Sustainable Development and its Sub-group on Biological Diversity (established in 1988, chaired by Chief, Inland Water Resources and Aquaculture Service). The Sub-group is serviced by the Environment and Sustainable Development Coordinating Centre (AGRE), which deals with coordination of FAO's work related to follow-up to UNCED, including Agenda 21. Cooperation with other FAO units also takes place on an informal basis. Joint activities commonly involve the backstopping of multidisciplinary field projects.

22. The Sub-programmes maintain close liaison with international agencies, NGOs and other institutions/associations, like UNEP, IAEA, Unesco, IPGRI and other CGIAR Centres, IUCN² and EAAP³. For example, activities with IAEA are related to application of nuclear technology to conservation and improvement of plant and animal genetic resources. Cooperation with UNEP covers implementation of international programmes for conservation of plant and animal genetic resources. Work with EAAP and IPGRI has, among others, concentrated on establishing an information basis on domestic animal and plant genetic resources.

B. Resources

23. During the period under review, both Sub-programmes have increased their share in budget allocations within their respective Programmes. Sub-programme 2.1.2.1 expanded its share from 3.8% in the 1988-89 biennium to 6.4% in 1994-95, and Sub-programme 2.1.3.3 moved in a similar fashion from 4.6% in 1988-89 to 7.3% in 1994-95.

24. Budgetary allocations to Sub-programme 2.1.2.1 show a sharp increase in the share devoted to the Commission on PGR. The growth in the 1990-91 budget partly results from a clearer indication of the actual cost of secretariat support to the CPGR; previously, the budget essentially only included salaries, but publications, consultancies etc were charged to other Programme Elements. The steep rise in the 1994-95 budget reflects primarily more frequent sessions requested by countries for the negotiation of the revision of the

² International Union for the Conservation of Nature and Natural Resources.

³ European Association for Animal Production.

International Undertaking on PGR, as mandated by Conference Resolution 7/93, and the concomitant preparatory technical and negotiating work of the Commission in the aftermath of UNCED and the CBD.

25. Initial activities for the organization of the Fourth International Technical Conference on PGR (see paragraph 18) were supported by Sub-programmes 2.1.2.1 and 2.1.2.3. The major responsibility for the preparatory work for the Technical Conference, however, is entrusted to the ICPPGR, which is set up as a headquarters-based, multi-donor Trust Fund project, with a total budget of US\$6 586 473 (not yet fully funded). It is foreseen that Regular Programme staff will be assigned to ICPPGR work as well.

26. During the period under review, established posts assigned to Sub-programme 2.1.2.1 were raised from four to seven professional posts. However, during the 1988-89 and 1990-91 biennia, only two out of four posts were filled, and only recently five out of seven positions were filled. (One post on the basis of a Trust Fund provided by Norway.)

27. The resource allocation to Sub-programme 2.1.3.3 for the 1994-95 period represents a departure from the previous pattern, with a much greater allocation going to the conservation, development and use of AnGR (Special Action Programme) and development of a Global Strategy, than to breeding and biotechnology applications. The overall budget increase for the Sub-programme was almost completely absorbed by the Special Action Programme, reflecting the increased support given by FAO to the preservation of domestic animal genetic diversity and to the follow-up to UNCED and the CBD.

TABLE 1.1: Sub-programmes 2.1.2.1. and 2.1.3.3 - Regular Programme Resource Allocation (in '000 US\$)

Main Components Share	1988/89	1990/91	1992/93	1994/95 ¹	TOTAL
Total Allocation Sub-programme 2.1.2.1.	955	1 287	1 513	2 412	6 167
Commission on PGR	25%	42%	44%	58%	46%
PGR for Sustainable Agricultural Development	60%	41%	56% ²	31%	44%
Information on PGR	15%	17%	n.a.	11%	10%
Total Allocation Sub-programme 2.1.3.3	729	946	1 229	1 741	4 645
Reproduction and Animal Improvement	31%	35%	48%	20%	32%
Application of Biotechnology in Animal Breeding and Genetics	21%	39%	24%	18%	24%
Special Action Programme on Conservation, Development and Use of AnGR	48%	26%	28%	62%	44%
Total RP Allocation	1 684	2 233	2 742	4 153	10 812

¹ The figures for this biennium are preliminary estimates.

² The resource allocation for Information on PGR was included as part of the item, PGR for Sustainable Agricultural Development.

28. For Sub-programme 2.1.3.3, until the current biennium, two professional posts were assigned to the Animal Genetic Resources Group. For the 1994-95 biennium, two additional posts have been established (but not yet filled). A major constraint during this period, both for the Animal Genetic Resources Group and the AGA Division in general, has been continuous staff turnover, including at the managerial level. From 1988 to 1994, the Division Director changed three times, with lengthy interim periods of one year and one year-and-a-half where the post was covered by Officers-in-Charge. During the same period, the coordination and management of the Animal Genetic Resources Group was the responsibility of three different officers. An similar situation affected also Sub-programme 2.1.2.1 and the AGP Division during the same period.

ACTIVITIES AND OUTPUTS

Sub-programme 2.1.2.1

29. The activities within Sub-programme 2.1.2.1 can be grouped into three major components: i) **Commission on PGR**; ii) **Use of PGR for Sustainable Agricultural Development** (comprising Support to Member Countries on PGR and Training on Genetic Resources, and *Ex Situ* Conservation and Networking, *In Situ* Protected Areas and Networking, and Evaluation/Monitoring of Use of PGR for Sustainable Agricultural Development); and iii) **Information on PGR** (including State of the World's PGR report and Global Action Plan).

30. The component **Commission for Plant Genetic Resources** represents the service function of the Sub-programme to the work of the Commission. Tasks include the organization of sessions of the CPGR and its Working Group, and the preparation of reports and documents for consideration by the Commission. Work performed by the Commission is an essential prerequisite for international efforts in the conservation and eventual utilization of plant genetic resources, and directions emanating from the CPGR provide guidance to other FAO units dealing with PGR. Despite its importance and large share of the RP budget, the CPGR was serviced, until recently, by only one professional, the Secretary of the Commission; since January 1995, it is serviced by two professionals. Further support to CPGR-initiated activities is, however, provided by the PGR Group and other FAO units in their respective fields (especially under Major Programme 1.3 Legal).

31. The scope of work performed by the CPGR Secretariat is largely determined by requests coming from the Commission. Activities undertaken in support of the CPGR are partly of a recurrent nature, like progress reports on standard agenda items, and partly commissioned papers analyzing new development and topics for the information of, and consideration by, the Commission; the Secretariat also develops draft international agreement as a basis for negotiation in the CPGR. The negotiation role of the CPGR has been strengthened in past years, particularly by Conference Resolution 7/93. Apart from directly CPGR-related work, the Secretariat has been heavily involved in FAO activities related to UNCED, the CBD, and other PGR aspects such as intellectual property rights. In broad terms, the CPGR has provided guidance for the other components of the Sub-programme, as well as for FAO work on PGR in general.

32. Since 1983 and following the recommendations of the Commission within the framework of the International Undertaking, FAO has developed a Global System for Plant Genetic Resources, which includes Codes of Conduct and other international agreements negotiated by countries through the CPGR, the concept of Farmers' Rights (a recognition

of farmers' contribution to PGR utilization and development, and of their right to share in the benefits derived from the use of the germplasm they have developed and maintained), a World Information and Early Warning System, a Network of *Ex Situ* Germplasm Collections in gene banks under the auspices of FAO, a Network of *In Situ* Conservation Areas (under development), the preparation of periodical reports on the State of the World's PGR, and a rolling Plan of Action. The first report on the State of the World's PGR and the Global Plan of Action are currently under development, as part of the preparatory process for the Fourth International Technical Conference on PGR, planned for June 1996 in Germany.

33. The component **Plant Genetic Resources for Sustainable Agricultural Development** promotes the establishment of an international network of *ex situ* base collections under the auspices of FAO, with the provision of advice and technical assistance especially to developing countries, to upgrade conservation facilities and to strengthen their institutional capacity to ensure the availability of germplasm. This is a combination of both indirect and direct FAO inputs to the conservation and utilization of PGR:

34. Recent activities include consultant services on the definition of activities and management structures of FAO's network of PGR collections; a project on cereal germplasm exchange and duplicate storage in China; a study of the methodology of mushroom germplasm conservation; a descriptor list of olive germplasm; networking of plant genetic resources in South Asia; 'Diversity Fairs' in the Andean Zone; establishment of a base collection of tea by cryopreservation; duplication of collections from the Czech Republic; Kiwi fruit germplasm collecting and evaluation; and support for several training courses. Recently, various crop-related networks were also established at the regional or global level to link PGR conservation with utilization, and these initiatives have received a positive response from national institutions and member countries⁴.

35. Other activities are specifically intended to support PGR conservation and utilization in member countries, through the assessment of genetic variation in germplasm collections, the evaluation and use of plant genetic resources for crop improvement, the promotion of training activities, and evaluation and monitoring procedures. The recent agreements with the CGIAR Centres concerning their germplasm collections (see Chart 1.2) and with IPGRI (Memorandum of Understanding) should increase the value of this work.

36. The Sub-programme is also expected to promote a Network of *In Situ* and On-farm Conservation Areas, especially in the so-called Vavilov centres of diversity, and to develop guidelines and strategies for the management of conservation areas. Specific activities include support for on-farm conservation activities in South East Asia. The low level of RP funding (approximately 2% of the Sub-programme allocation) as well as of extra-budgetary funding for this component has precluded the production of any significant outputs; only two field projects could reasonably be classified as having *in situ* conservation as a major concern.

⁴ The PGR Group guides, at the present stage, the following networks: (i) under the Escorena umbrella covering Europe, Near East and North Africa, can be mentioned: the Inter-regional Cooperative Network on Nuts, the Mediterranean Citrus Network, the Tropical and Sub-Tropical Fruit Genetic Variability Conservation Network; (ii) for Asia: the UTFANET network Under-Utilized Tropical Fruit Trees, the Traditional Crops Network; (iii) for Latin America: the IACNET-citrus network, the tropical and sub-tropical fruit network for the Caribbean (under preparation), the Andean Regional Programme for Traditional Crops; (iv) for Africa: the traditional crops network (under preparation); and (v) Global Networks: the International Mushroom Germplasm Conservation Network, the Cactus Pear Network, the Olive Genetic Variability Network.

37. The component **Information on Plant Genetic Resources** is charged with the preparation of periodic reports on the State of the World's Plant Genetic Resources, and updates to the Global Action Plan, the first of which are being prepared in connection with the ICPPGR. In addition, this element funds half the annual cost of the FAO/IPGRI Plant Genetic Resources Newsletter.

38. In 1992 the Plant Genetic Information and Seed Exchange Unit was created, following the recommendation of the 1991 FAO Conference to re-organize the Seed Laboratory and to integrate the Seed Information System into the World Information and Early Warning System on Plant Genetic Resources (WIEWS/PGR). Following a survey in the same year, a sub-set of FAO/IBPGR databases was updated and in 1993 the nucleus of the FAO World Information and Early Warning System on PGR (WIEWS/PGR) was established. Although formally concluded, the integration of the Seed Information System into the WIEWS/PGR is still in progress:

39. Currently the WIEWS/PGR contains summary records on 4.4 million germplasm accessions held in about 1 200 *ex situ* collections around the world. The system provides information on the structure of national PGR programmes or activities in all countries and the amount and type of germplasm collected in gene banks or other collections.

40. The majority of **publications** by the Sub-programme are produced for sessions of the CPGR. On average, more than ten discussion papers and progress reports are prepared for a regular session of the CPGR, in addition to a number of information papers. Publications by the rest of the Sub-programme are comparatively fewer, and consist of manuals, proceedings of meetings (which are often co-sponsored by the organizers/hosts, and frequently IPGRI), and guidelines in connection with elements of the Global System. Target audience almost without exception are policy makers, and PGR experts. There is one regularly appearing publication is the FAO/IPGRI PGR Newsletter.

41. Sessions of the CPGR dominate the **meeting** schedule of the Sub-programme. Between 1989 and 1994 the CPGR met three times in regular session; in addition, an extraordinary session was organized in 1994, and 8 sessions of the working group took place in the same period. Furthermore, 11 meetings not related to the CPGR were organized between 1991 and 1994, of which 5 were linked to regional networks (Mediterranean, West Asia and Near East, Central America).

42. **Training** sessions on PGR conservation were often organized and funded in collaboration with IPGRI and other CGIAR centres. During 1992-94, the Sub-programme's officers organized and/or lectured in 8 training sessions in Africa, Near East, Asia and Eastern Europe.

43. Crops comprise the most important sector of FAO **field activities**, accounting e.g. for 24% of the total value of all ongoing field projects in 1993. However, it is difficult to quantify the share of PGR conservation and utilization in FAO's Field Programme. Larger FAO field projects frequently have many components of which genetic resource utilization may be a part, but there are only a few, small, projects where PGR conservation is recognizably the main objective of the project⁵.

⁵ In the Organization's information system, areas of work covered by a project are listed according to PWB codes. However, no priorities are indicated and records of project expenditure are not linked to the respective PWB code.

44. The recently completed project, Development of Agricultural Genetics for Viet Nam, VIE/87/005, is an example of a project which can be recognized as almost exclusively targeted at the utilization of plant genetic resources through biotechnology and advanced breeding. While the objective of this project was to build up a strong genetic resources capacity to support research on plant breeding, its legal component contributed to strengthening institutional capacity in plant breeder's rights, international accords, and legal instruments covering intellectual property and patent rights.

45. The long-running project, Advanced Centre on Post-Graduate Agricultural Education and Research in India, IND/85/020 (total budget US\$12 million over eight years), is an example of a multi-faceted project. It included training inputs to PGR conservation and utilization - such as seed storage, seed pathology, and seed testing. Some other components for example, soil conservation through agroforestry, supported indirectly the utilization of PGR, for which the total input in 1993 (the project closed early in 1994) is estimated at not more than US\$40 000.

Sub-programme 2.1.3.3

46. The main activities carried out under Sub-programme 2.1.3.3 can be grouped into three components: (i) **Reproduction and Animal Improvement**, covering support to member countries for the formulation and implementation of policies and programmes/projects aiming at sustainable development of AnGR; (ii) **Application of Bio-technology in Animal Breeding and Genetics**, aimed at adaptation and dissemination of biotechnology applications and genome manipulations to animal breeding, animal production and genetic improvement of valuable indigenous breeds; and (iii) **Special Action Programme on the Conservation, Development and Use of Animal Genetic Resources** which encompasses activities initiated during previous biennia in response to international concern on the conservation and sustainable management of AnGR.

47. Activities under the component **Reproduction and Animal Improvement** have supported member countries' efforts to improve efficiency and increase productivity through better reproduction techniques and breeding methods. Work has included: (i) identification, analysis and dissemination of improved reproduction techniques, e.g. artificial insemination, embryo transfer; and (ii) analysis and dissemination of adapted breeding methods and models, e.g. generating synchronized oestrus of cattle under simple field conditions, open nucleus breeding systems and crossbreeding. The work entails a process of information gathering from animal research centres, through visits and technical participation in relevant congress and symposia and the organization of related expert meetings. The information collected is fed back to the concerned public through training, publications, direct technical support to countries and implementation of livestock development projects.

48. In early 1988 the FAO Semen Donation Scheme was strengthened with the establishment of the FAO Bull Semen Bank near Rome with a storage capacity of 500 000 doses, and another cattle and buffalo semen bank located in Bangkok. During the period 1988-91, more than 330 000 doses of frozen bull semen were donated by some developed countries⁶, and stored and distributed by the FAO Bull Semen Bank to 23 developing

⁶ Germany, Ireland, Italy and UK.

countries⁷. In addition, the FAO Semen Bank in Bangkok collected about 100 000 doses of frozen semen of indigenous cattle and buffaloes and distributed them to several Asian countries. During the same period, 11 liquid nitrogen plants for frozen semen and embryo storage were restored and maintained through a Netherlands Trust Fund project in seven African countries⁸.

49. In 1992, donors to the scheme decided to organize semen donations within the framework of their own bilateral cooperation programmes. At the same time, it had become evident that the effects of the Semen Scheme ran counter to the Sub-programme's AnGR conservation activities, as it all too often fostered breed replacement through exotic cattle at the expense of indigenous breeds. The Scheme and the two semen banks were then virtually discontinued, and the emphasis of the Sub-programme's was gradually shifted from crossbreeding and breed substitution strategies to the improvement of indigenous breeds under better livestock management systems.

50. During the review period, about 36 missions were carried out by the Sub-programme staff to advise member countries on livestock development policies and programmes for reproduction and breeding, and to support national training courses on these subjects. Thirteen training courses or workshops were organized in the areas of animal reproduction for about 150 national professionals. In addition, 16 publications on these subject matters were produced and distributed.

51. Under the component **Application of Biotechnology in Animal Breeding and Genetics**, emphasis has been on the evaluation of potentials and limitations of biotechnology applications in developing countries, with special attention to in-vitro reproduction techniques for application in livestock development and genetic resource conservation. Close cooperation was established with IAEA for joint programmes such as the FAO/IAEA programme on Large Ruminant Reproduction (e.g. application of radio-immunoassay for improving the reproductive efficiency and productivity of large ruminants) and FAO/IAEA joint research on animal reproduction and disease diagnostics through the application of immunoassay techniques.

52. Cooperation with UNEP covered DNA technologies for the conservation and selection of AnGR, including a FAO/UNEP training course on this subject in 1992 in Brisbane (Australia) with the cooperation of the Molecular Animal Genetic Centre of CSIRO. Additionally, six training courses on biotechnology were organized to upgrade the knowledge of about 60 participants. In 1993, support was provided to the CEMERGEN of Mexico for a feasibility study of in vitro production of embryos and on farm use of F1 embryos. Two major publications were also issued on biotechnology and its applications for genetic resources preservation and animal production and health.

53. While FAO has a long tradition of working in the area of global AnGR conservation (this was e.g. the topic of a FAO/UNEP Technical Consultation in 1980), the subject emerged as a priority area more recently with the establishment of the **Special Action Programme on Animal Genetic Resources** in 1993. During the period reviewed, work has centred on: (i) the promotion of international awareness of the need to preserve endangered

⁷ Albania, Cape Verde, Côte d'Ivoire, Cyprus, Ecuador, Egypt, Ethiopia, Guyana, Haiti, Malaysia, Mongolia, Morocco, Myanmar, Nepal, Pakistan, Rwanda, Somalia, Tanzania, Turkey, Uganda, Viet Nam, Zaire and Zanzibar.

⁸ Egypt, Ethiopia, Rwanda, Somalia, Tanzania, Zaire and Zanzibar.

breeds of domestic animals; (ii) support to member countries in the formulation and implementation of AnGR policies and conservation programmes; and more recently on (iii) the development of a comprehensive approach and strategies for a global management programme for AnGR, based on an appropriate legal framework, and the identification and mobilization of external resources required for the programme's funding.

54. The analysis of genetic conservation policies and design of action programmes, has been pursued through advisory missions, the organization of international expert meetings, as well as participation in international symposia and conferences devoted to the conservation of AnGR. In conjunction with field projects, work on breed improvement concentrated in 1990-91 on the preparation of comprehensive breed development plans in some countries, e.g. Bangladesh and Ethiopia, and the demonstration of practical breed improvement strategies based on the genetic screening of some indigenous breeds. Collaboration with UNEP was maintained through joint meetings, e.g. in relation with the *Ad Hoc* Inter-governmental Working Group of Experts on Biological Diversity and the Ecosystem Conservation Group.

55. Knowledge of AnGR maintenance, development and use was fostered through applied research, publications and training. The Sub-programme, in cooperation with UNDP, UNEP, EAAP and member countries, has implemented surveys and research projects for the study of the genetic structure of promising indigenous livestock breeds as well as monographs on evaluation of indigenous breeds and definition of animal genetic descriptors for domestic species and breeds, with a view to establishing an homogeneous set of parameters and descriptors of the breeds and of their natural environments. This work provided the basis for the computerized information system known as Global Animal Genetic Resource Data Bank, which was provisionally established 1989 in Germany, in cooperation with EAAP. More recently, the Global Data Bank was transferred to FAO headquarters. The preliminary information stored in the Data Bank was analyzed and used to prepare the World Watch List for Domestic Animal Diversity, published in 1993, which for the first time provided a global overview of breeds in danger of extinction. A series of workshops on the use of the global data bank and on the assessment of genetic distancing to determine breed contributions to diversity was also organized.

56. The studies, periodical surveys, technical papers and training manuals produced by the Sub-programme are disseminated among the scientific and technical community. The Animal Genetic Resource Information Bulletin is published twice per year and distributed to a specialist readership of about 1,500 throughout the world.

57. Support to Germplasm Conservation through Regional Animal Gene Banks was stepped up following the recommendations of the FAO/UNEP Panel of Experts on AnGR (1986). Gene banks were assisted in seven countries⁹ of Africa, Asia and Latin America; in addition, regional centres were conceived as an inter-country cooperative programme for the storage of germplasm of endangered breeds on a TCDC basis. It was planned that initially each regional centre would be supported by trust fund projects; unfortunately, this did not materialize and the proposal has not been pursued.

⁹ Argentina, Brazil, China, Ethiopia, India, Mexico and Senegal.

58. During the period under review, 42 field projects, with a total combined budget of US\$21.3 million, have been technically backstopped by the Animal Genetic Resources Group. About 50 percent of these projects were mainly devoted to AnGR with the Group acting as lead unit. The great majority (35) of these projects were aimed at livestock production development and improvement of animal reproduction and breeding. Only seven projects were essentially addressed to AnGR preservation. The first one was an inter-regional project funded by UNEP for the preparation of the World Watch List of endangered breeds; the second one is a Netherlands-funded project aimed at maintaining and repairing liquid nitrogen plants for cryogenic conservation of semen in seven African countries and the third one is a Japanese-funded project of one year's duration to identify and monitor genetic resources of 12 Asian countries, to plan a regional development programme and to train national experts on techniques for *in situ* and *ex situ* conservation. The fourth project was a Unilateral Trust Fund project of Saudi Arabia for the conservation of the Arabian horse; the other three were TCP projects (Regional Asia, Regional Latin America, and Mongolia) intended to stimulate cooperation between countries in the implementation of their AnGR conservation programmes.

EFFECTS AND IMPACT

59. During the last decade or so, the conservation and use of genetic resources for food and agriculture have received heightened attention both by policy makers and the public at large. Unlike the general decline in official development assistance, funds made available to the protection of the environment and biological diversity have been increased, and generally these themes have taken on a new importance in the aftermath of UNCED.

60. The most visible achievements for FAO in this field have been in connection with the CPGR and the International Undertaking. FAO's role in agricultural biodiversity was recognized in UNCED's Agenda 21. Chapter 14, "Promoting Sustainable Agriculture and Rural Development", contains a recommendation for FAO to strengthen its Global System for Plant Genetic Resources, with specific reference to its World Information and Early Warning System, Farmers' Rights, the Network of *In Situ* Conservation Areas, periodical reports on the State of the World's Plant Genetic Resources, and a rolling Plan of Action. Agenda 21 moreover supports the convening of the Fourth International Conference on Plant Genetic Resources and the adjustment of the Global System for PGR in line with the outcome of the CBD. In connection with the preservation of AnGR, FAO is also mentioned in Agenda 21, but without specific institutional references, as in the case of PGR.

61. Today, the Global System for the Conservation and Utilization of Plant Genetic Resources (see also Chart 1.1) is largely in place, as shown in Chart 1.2.

62. The PGR Group, together with IPGRI, successfully played a catalytic role in drawing funds from various donors to rescue the endangered *ex situ* collections in Russia and some other Eastern European countries. Refrigeration equipment was provided to the Bulgarian gene bank through a TCP project in response to the emergency situation in order to prevent the loss of the germplasm collection due to defunct cold rooms. The safety of germplasm was also improved through support from the Regular Programme in multiplying adequate amounts of seeds for safe-duplicate storage, for example germplasm collections in the Czech Republic. Other work on cereal germplasm has recently taken place in a number of countries in Asia.

CHART 1.2: The Global System for the Conservation and Utilization of Plant Genetic Resources - Status Report

Component	Status
Commission on Plant Genetic Resources	Established 1983; 126 members ¹ in February 1995; 5 biannual sessions plus one extraordinary session held, and also 9 sessions of permanent Working Group of CPGR. Currently widening of the Commission under consideration to include in particular AnGR.
International Undertaking	Established 1983; 110 countries ¹ adhering in February 1995; annexes (including Farmers' Rights) agreed in 1989 and 1991. Currently under revision to harmonize with CBD.
International Fund for PGR	Agreed by Conference decision 3/91; not yet established. Global Plan of Action will provide estimates of requirements for fund.
Global Plan of Action	First Plan under preparation by ICPPGR. Expected to be adopted by Fourth International Technical Conference in June 1996.
Report on State of World's PGR	First Report under preparation by ICPPGR. Expected to be adopted by Fourth International Technical Conference in June 1996.
World Information & Early Warning System	Information system established including records of <i>ex situ</i> collections in 135 countries. Early Warning System at planning stage.
Network of <i>Ex Situ</i> Collections	Established with germplasm collections of 12 IARCs (agreement signed in 10/94); 31 countries have also expressed interest. Model agreements for gene banks agreed by CPGR; currently under revision mainly to harmonize with CBD. International standards for gene banks agreed.
Network of <i>In Situ</i> Areas	No significant progress.
Codes of Conduct	Code of Conduct for Germplasm Collecting and Transfer adopted; draft for Code of Conduct on Biotechnology under preparation.

¹ Total number of countries and Regional Economic Integration Organizations being members of the CPGR and/or adhering to the Undertaking is 142, as not all CPGR members adhere to the Undertaking, and *vice versa*

63. Technology transfer on germplasm conservation was also supported through TCP and Regular Programme activities. For example, Cuba became the second country, after France, in using cryopreservation technology to conserve shoot tips of sugarcane germplasm and the first base germplasm collection with recalcitrant seeds, namely of tea, is being established in India.

64. Under the component Reproduction and Animal Improvement, technology transfer on animal reproduction techniques through several field projects has generated positive and durable effects in some member countries. For example, during 1988-91 the Sub-programme contributed to strengthening the scientific and technical capabilities of the Faculty of Veterinary Science of Tirana (Albania) in modern animal reproduction techniques. Embryo transfer technologies for cattle were improved in Cuba with the support of a TCP project. Artificial insemination services of the Democratic People's Republic of Korea were strengthened through the establishment of 12 insemination centres,

the introduction of embryo transfer technology and the production of semen of indigenous breeds of cattle and goats. An International Trypanotolerance Centre was established and strengthened in The Gambia with technical capability to assist governments of 19 West and Central African countries¹⁰ in the formulation of livestock policies for tsetse-infested areas as well as to carry out applied research on trypanotolerant livestock and to prepare, implement and monitor livestock development projects based on trypanotolerant breeds. An operational network of cooperating research institutes of African countries is exchanging technology knowledge within the framework and with the support of the International Centre.

65. The Application of Biotechnology in Animal Breeding and Genetics has generally shown mixed effects. Some projects undertaken to this end proved to be non-sustainable, owing to institutional weaknesses of national livestock and veterinary services concerned, and inappropriate emphases on exotic genetic types. However, in specific fields support provided through training contributed to an improvement in the expertise available at national level (for example, the establishment of national teams for the maintenance and utilization of cryogenic equipment for semen and embryo conservation). Similarly, the joint FAO/IAEA programmes have contributed to updating the knowledge of member countries' scientists in several fields of research e.g. animal reproduction, disease diagnosis, genome mapping, and animal breed selection. FAO has widely been acknowledged to be in the vanguard of biotechnology applications for animal production development.

66. In general terms, the Sub-programme developed during the 1980s the technical inputs which would later be incorporated in the Special Action Programme on AnGR. Following the recommendations of the FAO/UNEP expert consultation held in Lomé in 1980, an attempt was made to establish a global system for a census information collection and processing programme, as well as a network of regional animal gene banks for *ex-situ* cryogenic conservation of endangered breeds. By the late 1980s, it became evident that without a coherent institutional framework, FAO-supported activities in the field of AnGR would remain isolated events incapable of generating tangible effects and impact in a large number of countries. The Ninety-eighth Session of the FAO Council addressed this situation and recommended that FAO prepare, *inter alia*, a detailed programme for sustainable development of AnGR on a global level. This recommendation as well as further details suggested by an Expert Consultation organized in 1992, furnished the rationale and main elements of the Special Action Programme established in 1993.

CONCLUSIONS AND ISSUES

67. The Sub-programmes on Conservation and Management of Plant Genetic Resources and on Animal Genetic Resources are the main pillars of FAO's mandate in fostering and coordinating national and global action for the conservation of natural resources. During the biennia under review, this mandate has gained importance. The two Sub-programmes contributed to the development of international instruments, like the UNCED Agenda 21 and the Convention on Biological Diversity, and in turn have received increased attention from the international community. A number of proposals for substantive global actions have been prepared by the Sub-programmes and are currently under consideration or being implemented.

¹⁰ Benin, Burkina Faso, Cameroon, Central African Republic, Congo, Côte d'Ivoire, Equatorial Guinea, Gabon, Gambia, Ghana, Guinea, Guinea-Bissau, Liberia, Mali, Nigeria, Senegal, Sierra Leone, Togo, Zaire.

68. FAO's allocation and use of resources reflect the increased emphasis given to conservation and sustainable use of genetic resources for food and agriculture, with the share of both Sub-programmes in the overall budget of the Crops and Livestock Programmes rising substantially following the 1990-91 biennium. The streamlining particularly of the Animal Genetic Group structure, according to the emphasis on AnGR preservation and utilization, merits to be further pursued in order to clearly show the main orientation of FAO's work toward the global coordination of international efforts and the promotion of global undertakings and inter-country action programmes.

69. FAO's work on AnGR and PGR will require substantial extra-budgetary funding if all programmes and action plans currently on the agenda are to be realized. Vis-à-vis the GEF and in view of the general donor fatigue, hopes for the establishment a new funding instrument like the International Fund, or the provision of massive extra-budgetary funding for the Global Strategy for AnGR may be unrealistic. A clearer definition and assessment of potential funding sources and modalities must be a matter of priority, and would help to determine financial parameters for the plans and programmes currently under development.

70. There is ample scope within FAO to increase involvement in genetic resources work by other departments, e.g. the Economic and Social Policy Department, and the new Sustainable Development Department. Recently, there has been some useful collaboration between Sub-programme 2.1.2.1 and the ES Department on documents for the First Extraordinary Session of the CPGR (Ex1/94/5 Supp. and background study papers no. 1 and 2), and on economic intelligence to guide PGR conservation and utilization networks. For both Sub-programmes, however, firmer institutional arrangements would be required to deal from a socio-economic point of view with aspects like the value of genetic resources in farmers' fields and stables, and the financial and institutional implications of plans and programmes for genetic resources conservation and utilization. In addition, innovative concepts could be developed in collaboration with the extension and training units of the new Sustainable Development Department, such as incentive schemes for on-farm conservation activities, and extension approaches suitable for conservation work.

71. With some exceptions, FAO's work on PGR is mainly covered in scientific publications, or brought to the attention of governments through country participation in the CPGR. FAO's PGR work is quite frequently covered in the electronic and print media, but not on a regular basis. An opportunity is missed with the FAO/IPGRI Newsletter, which publishes external contributions but hardly reports on FAO/IPGRI activities. The Animal Genetic Resources Information series does better in this regard through its regular editorial section, which keeps the readership informed of AnGR-related developments in FAO.

72. A widening of the mandate of the CPGR to include AnGR is currently under review by the CPGR and the FAO Council. Earlier on, the 1991 CPGR counselled against a widening of the CPGR's mandate, as did the 1992 Expert Consultation on AnGR. The 1994 Extraordinary Session of the CPGR recommended a feasibility study to be carried out to define mechanisms and costs involved. It appears, however, that a widening of the CPGR's mandate would have been much more opportune at an earlier stage, when the Commission was less burdened with work occasioned by UNCED, the CBD, the negotiation of the revision of the International Undertaking, and the ICPPGR.

73. It is obvious that an international forum is needed to address policy and legal issues, to provide technical support, and increase the cooperation with other bodies, in particular with the Conference of the Parties of the Convention on Biological Diversity, on matters related to domestic animal genetic diversity. In line with these considerations, it should be noted that the CGIAR system, which is co-sponsored by FAO, has already agreed that there should be a system-wide policy and programme for genetic resources for agriculture as a whole, with IPGRI as the lead centre.

Sub-programme 2.1.2.1

74. During the 1980s, a protracted international discussion took place concerning the legal ownership of, and access to germplasm, and particularly PGR. FAO-organized meetings and consultations, including FAO Conferences, proved useful to clarify some of the issues involved and develop a feasible *modus operandi* for international agreements concerning important aspects of access to, and utilization and transfer of germplasm. The creation of the CPGR provided a forum for the various parties to discuss and resolve their disputes, and to develop an agreed framework (like the Global System) within which PGR activities could take place.

75. The 1993 Conference noted that the preparatory process of the Fourth International Technical Conference on PGR would be under the guidance of the CPGR and its Working Group, and that the revision of the Undertaking and the preparations for the Fourth International Technical Conference would be integral parts of one process. However, the project document for the ICPPGR introduced a deliberate detachment of the ICPPGR from the competent Regular Programme units, as the formal relationship between the Secretariat of the Fourth International Technical Conference (ICPPGR) and the RP units under Sub-programme 2.1.2.1, was not clearly defined. In addition, neither the Expert Group nor the internal FAO Task Force expected to oversee and advise the Project, were given clear terms of reference. Perhaps as a consequence, day-to-day contact between the ICPPGR and other FAO units has been on an irregular basis. The chance to create synergetic effects between these units and the project has thus not always been realized.

76. Additionally, considering the political importance attached to the Technical Conference and its increased relevance for FAO's mandate and programmes in general, a firmer rooting of the Conference secretariat within FAO's hierarchical structure and within the relevant technical unit (perhaps similar to the arrangements made for the FAO/WHO International Conference on Nutrition - ICN) almost certainly would have provided stronger institutional backing and more immediate access to the Organization's higher management levels.

77. The current attempt to harmonize the International Undertaking with the provisions of the Convention on Biological Diversity is a challenging task for FAO and its main clients, the ministries of agriculture. While the CBD, which is mainly under the responsibility of ministries of the environment, is a legally binding instrument ratified by 106 nations, the Undertaking is, as yet, a voluntary agreement and, as such, in a legal sense is subordinate to the CBD. However, the Undertaking is far more focused on the agricultural aspects of biodiversity, and provides the ministries of agriculture *vis-à-vis* the ministries of the environment with a recognized instrument to stress the importance of the conservation and utilization of biological diversity for food and agriculture. At present, three options are under consideration by the CPGR: (i) the revised International

Undertaking becomes a protocol to the CBD, and will then be binding; (ii) the Undertaking becomes a binding instrument in its own right; and (iii) the current non-binding status will not be changed.

78. Work progress on PGR was stalled often due to funding problems or delayed recruitment of staff. For example, the strengthening of the CPGR Secretariat, recommended by the CPGR in 1989, was accomplished only in January 1995, with the arrival of the Assistant to the Secretary. In 1989 the CPGR recommended the periodic preparation of the State of the World's Plant Genetic Resources report and the establishment of the World Information and Early Warning System on Plant Genetic Resources (WIEWS/PGR), both of which, until recently, have hardly moved ahead. The work on the World Information and Early Warning System/State of the World's Plant Genetic Resources report only started in August 1992, when the Information Officer joined the Organization. The delayed progress in the information field has also prolonged the continuing *de facto* separation of the seed and PGR information units. The 1991 session of the CPGR recommended the convening of the Fourth International Technical Conference on PGR in 1993 or early 1994, and the preparation of the Global Plan of Action as well as the first State of the World's PGR report within the framework of the Conference. Initial progress was slow, and difficulties in attracting extra-budgetary funding for the ICPGR caused the event to be postponed to 1996.

79. CGIAR centres signed an agreement with FAO in October 1994 to bring their base collections of *ex situ* plant germplasm collections under the auspices of FAO. This had been recommended by the CPGR in 1987, in line with Article 7 of the Undertaking passed in 1983. In this instance, progress was slow to achieve as the issue was at the centre of a discussion concerning, among others, questions of access to existing germplasm collections, and the managerial responsibilities of the IARCs. Also in 1987, an international fund on PGR was established. This fund, which is different from the International Fund endorsed by FAO Conference Resolution 3/91 (but not yet established), has only been scarcely funded and it appears that no proper assessment has been taken as to donor countries' willingness to provide financing.

80. *In situ* conservation work promoted by FAO has not yet reached any meaningful proportions. The RP budget allocations have remained extremely limited, despite the importance attached to it by the CPGR, and no significant project funding has been obtained so far. While other agencies and institutions, including IPGRI, will expand their involvement in *in situ* conservation, it will be important to ensure that FAO is able to play a vital part in this area. There is the possibility that lack of progress on *in situ* conservation could negatively affect the implementation of the farmers' rights concept - successful *in situ* conservation could demonstrate how funds could be channelled to farmers for PGR work. Within FAO, *in situ* conservation activities are carried out in collaboration with the Forestry Department, which has focused much more on wildlife and forest conservation than on agricultural biodiversity. More clearly defined criteria for dealing with *in situ* conservation of forest and agricultural plant genetic resources, respectively, would appear necessary in order to foster a rational division of labour within FAO. Furthermore, the possibilities for increased funding should be explored, and collaboration between FAO and IPGRI within the framework of the Memorandum of Understanding as well as beyond should be re-examined with a view to avoiding overlap in this important area.

81. A potential limiting factor for the CPGR has been that developing countries often lack the financial resources to send their experts to the sessions of the Commission in Rome. Temporary relief was provided by Canada for the CPGR's last Extraordinary Session, when extra-budgetary funds were provided to enable a number of developing countries' delegates to attend the session. Further support of this kind will be necessary to ensure a balanced representation of countries and technical experts for the coming, more frequent sessions of the CPGR, during the negotiation of the revised International Undertaking.

82. While the conservation of PGR has been extensively dealt with by FAO (and a vast amount of documentation is available), the Organization has not yet undertaken sufficient policy analysis or adopted a decisive approach for dealing effectively with issues related to the sustainable utilization of PGR. Most field projects backstopped by Sub-programme 2.1.2.2 (Crop Management and Diversification), for example, have almost by necessity a genetic resources utilization component. However, there seems to be neither a conceptual framework nor institutional linkages (like a working group) that would bring the two Sub-programmes together. Likewise, Sub-programme 2.1.2.3 Seed Production and Plant Improvement and the PGR Group have tended to operate independently, and only recently have initiatives been taken to develop a global seed policy and programme approach, which may also strengthen linkages between all three Sub-programmes.

83. There is thus a need to have a clear, unified position on the issues of genetic diversity and utilization, which should be addressed through the entire Programme 2.1.2 Crops. This was realized also by the Organization's Programme and Finance Committees, which recommended in 1993 that greater visibility be given to the CPGR Secretariat (and implicitly to the integration of conservation and utilization) within the FAO structure. A consistent policy on PGR utilization, which is already contemplated in the International Undertaking on PGR, and is also within the scope of the CPGR, would certainly necessitate more specific discussions on questions related to breeders' and farmers' rights, as well as on technical aspects of PGR utilization in plant improvement programmes and production of seed and planting material. These issues will need to be considered by member countries and negotiated in the appropriate fora, starting with the Commission on Plant Genetic Resources, and FAO will need to involve Sub-programme 2.1.2.1, and other Sub-programmes concerned, in the elaboration of relevant inputs and proposals.

Sub-programme 2.1.3.3

84. During the period under review a number of activities on AnGR conservation and use have been carried out by FAO with few resources, in cooperation with UNEP, EAAP, UNDP and other agencies and institutions. A number of methods and techniques have been tested and promoted, but are likely to remain isolated efforts if they are not multiplied on a larger scale. It is expected that the Global Strategy for AnGR currently under consideration will provide the framework within which international activities could be initiated and coordinated. This global framework would be established taking into account the experience gained from the Global System for Plant Genetic Resources, while respecting the specific characteristics of the Animal Kingdom. In this context, a number of National Coordinating Institutes and Country Contacts for AnGR have already been identified by Member Governments and are being established.

85. A Global Strategy on AnGR would also be expected to provide a better environment for specific field projects. The hitherto relatively small number of field projects and their modest budgets (a total of US\$2.7 million) aimed at animal genetic resource conservation, could probably be explained by two major factors. First, FAO's member countries and the international community at large were more concerned with increased productivity of their livestock production systems, and hence did not go beyond a formal expression of general interest in AnGR conservation programmes/projects. Second, the Sub-programme did not succeed in convincing both donors and recipient countries of the priority needs of conservation and development of the animal biodiversity, as until recently there have been only very few examples of successful AnGR conservation and utilization projects.

86. The strategy of FAO - within the framework of its limited RP resources - will be centred on selected areas in which the Organization has clear comparative advantages and, in some cases, a unique position. This strategy would essentially have a normative focus, facilitating international understanding and coordinating the multiple activities undertaken by different international, regional or national institutions working on the characterization, conservation and development of AnGR. In parallel, information activities - the collection, analysis, processing and dissemination of data on domestic animal breeds in general as well as the periodical preparation of priority lists of endangered species - will need to be stepped up so as to secure continuing interest in, and commitment to, AnGR. In concentrating on coordination and information activities, FAO would confirm its global coordinating role for managing AnGR.

87. After acceptance in principle by member countries of the approach of FAO's proposed Global Strategy and with additional extra-budgetary funding, FAO would be able to play its role as coordination and liaison centre on AnGR with national governments, international bodies and multilateral or bilateral organizations working on AnGR. In particular, assistance could be offered for the development of national legislation, international instruments, codes of conduct, guidelines for protection and development of AnGR diversity, and the design of policies, programmes and projects for the conservation and sustainable use of AnGR.

