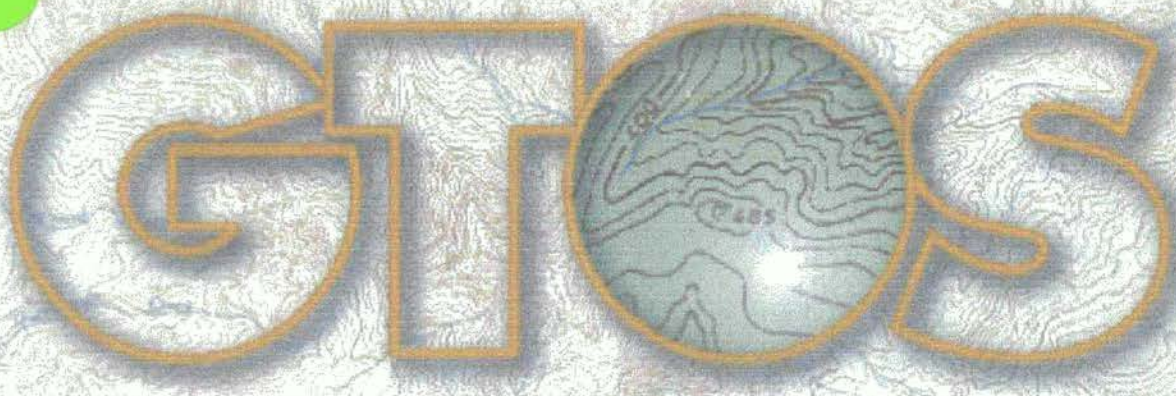

Global Terrestrial Observing System

GTOS & THE CONVENTION TO COMBAT DESERTIFICATION


GTOS AND THE CONVENTIONS

The Global Terrestrial Observing System

and the data and information needs of some of the

Environmental Convention Secretariats

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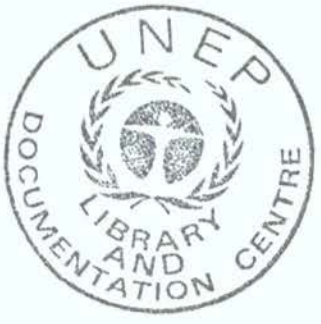
GTOS-7



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ANNEX I: PERSONS CONSULTED

1 SUMMARY CONCLUSIONS AND RECOMMENDATIONS

1. International Conventions that are concerned with the conservation or utilisation of renewable natural resources do form a potential user group for GTOS. Seven of the eight Convention Secretariats visited are interested in working with GTOS. This suggests that other global and regional Conventions may also be interested in an association with GTOS.

2. The Conventions require habitat and other site-related data to show the responses of their sites to changing environmental, ecological and management pressures. This will allow the development of practical, soundly based management plans to ensure that sites are adequately conserved or are managed on a sustainable basis. Detailed data needs of the individual Conventions, as far as can be ascertained, are given in the description of each Convention.

3. GTOS observational activities should allow the effectiveness of management actions at Convention field sites to be assessed, particularly actions for preventing or mitigating the effects of seemingly adverse changes.

4. The Conventions need relevant data from the sites of interest as well as from a large zone surrounding the site (e.g. if the site is a marsh, data are also needed for the whole catchment area on which the marsh is dependent).

5. In putting work proposals before a Convention GTOS must follow the procedure of that Convention for the approval of its work programme. For each Convention this will normally entail working through the Secretariat to obtain for each major GTOS proposal the formal approval of, first, the Scientific and Technical Committee and, second, the Conference of the Parties. GTOS should thus work very closely with the Secretariats of the Conventions in drawing up relevant GTOS project proposals as this will ensure that appropriate procedures are followed.

6, To facilitate this procedure GTOS should seek observer status on the Scientific and Technical Committees of appropriate Conventions, particularly the Convention to Combat Desertification and the Convention on Biological Diversity which are still developing their work programmes.

7. Technical representatives of the Conventions, particularly those on Biological Diversity and to Combat Desertification, should be asked to participate in some GTOS programme planning sessions.

8. Services provided through GTOS (and co-operating agencies) should include advice to developing country Parties on how to utilise data from their observational systems for national resource management and policy making, including needed national infrastructure, staffing, and training. Services to be provided should also include advice on setting up and operating data management systems; assistance in analysis and interpretation of data, especially for communicating or reporting any national data required under the Conventions; and provision of spatially referenced largely satellite-based maps at appropriate scales, for land-cover categories, land-use information, weather data, and other specified variables.

9. GTOS should develop a common observational data management system for use by all the Convention Secretariats and which they could recommend to their Parties. This would be useful even if the system is not adopted by all GTOS users since it would enable the Conventions to exchange data and information readily, and co-operate more efficiently in joint activities.

10. The Conventions need reliable, believable data so GTOS should adopt adequate data quality assurance arrangements, quality control procedures, and harmonisation for its data gathering and data management activities. GTOS should gather data according to GTOS harmonised methods and protocols that result in data of agreed predetermined levels of accuracy and precision. This helps to ensure that the same types of data gathered for different Conventions are both comparable and compatible. GTOS should also be able to demonstrate to potential users the relevance of data from GTOS stations distant from Convention sites.

11. At an early stage GTOS should begin to develop an agreed data release policy for primary and secondary data gathered or developed under the auspices of GTOS. This is important when working with the Conventions where data gathered under them are often considered sensitive by the Parties.

12. GTOS should compile a catalogue of available data relevant to its programme so that GTOS users are aware of the information and data that already exist. An on-going GTOS metadatabase should be developed that contains for all data sets and runs (both pre-existing and GTOS) full historical details including the purposes behind the original work, the methods used, quality assurance procedures, and resultant publications. Participants in GTOS should be encouraged to provide this information on new data routinely for inclusion in the GTOS metadatabase.

13. GTOS should develop or adopt standard definitions for describing or classifying many variables such as soil types, vegetation classes and taxa. Relevant classifications already in use by the Conventions (e.g. wetlands) should be considered in relation to the terms and classes of GTOS categories.

14. For reasons of cost and practicality GTOS should begin its operations modestly, starting simply, and building as much as possible on national, regional and global facilities and systems that are already in place. Great care should be exercised in the choice of variables to be observed so that the system does not become overloaded.

15. GTOS should carefully review the data needs of each Convention with a view to reducing the number of variables to be measured to the minimum necessary for obtaining a proper understanding of what is happening at each series of Convention sites. GTOS should also develop a core minimum set of sensitive variables to be measured at each field site. The same minimum set of variables would thus be measured at each field site of each Convention; this would facilitate comparison between sites and between times.

16. Several Conventions are moving away from more traditional conservation oriented approaches towards practical management issues, including the need to predict changes in ecosystems. Consequently, there is now an interest in environmental, ecological and management modelling. Thus fundamental bio-physical data for process modelling will be increasingly required from GTOS.

17. Socio-economic data are important to the work of the Conventions. It is important that **right from the start** GTOS give adequate attention to the acquisition of relevant categories of this type of data.

18. Some Convention Secretariats asked that GTOS consider recording crustal stress and tectonic earth movements and their consequences as these could have disastrous effects on many Convention sites. This is a serious problem in many areas and GTOS should give consideration as to how best to obtain the required data.

19. In view of the interest shown by some Convention Secretariats in carrying out inventories of the status of biological diversity in selected Convention sites and their surrounding zones, GTOS should look into the feasibility and practicality of carrying out such inventories under the auspices of the GTOS programme.

20. Several Conventions are extending their activities to coastal areas focusing on mangrove swamps, sea grass communities and coral reefs. GTOS should consider what part it can play in these activities. This is an area where the interests of GOOS, GCOS and GTOS overlap. A joint pilot activity in one or two areas between the three Global Observing Systems, in co-operation with the relevant Convention Secretariats, should be considered.

21. The Basel Convention has some data needs that are more specialised than those of the other Conventions that were consulted. Essentially there is a need to monitor the various toxic substances and chemicals that might find their way into the atmosphere, ground water, and food production systems from hazardous waste disposal sites. GTOS should consider the possibility of a special subprogramme specifically for the Basel Convention.

22. GTOS data would be of importance to the global assessments (e.g. wetlands, desertification, biological diversity of some taxa and habitats) to be carried out under the auspices of some Conventions. GTOS should explore the data needs of these assessments to ensure that the right data are collected, bearing in mind the need for adequate quality assurance, quality control, and data delivery mechanisms.

23. Several of the Convention Secretariats indicated an interest in developing a marine component of their Convention. Assessing the status, trends, and movements of marine animals, including Cetaceans and fish stocks, and the habitat and environmental factors that affect them, will be important aspects of this work. GTOS should consider whether it is feasible and practical to include these aspects in the future work programme of GTOS. These should be considered as possible fields in which the three Global Observing Systems could collaborate.

24. At the moment GTOS is not well known, has no physical entity, and lacks assured funding. The Convention Secretariats consequently find it difficult to believe in a potential partner that as yet has no material existence. The Sponsors should, therefore, as soon as possible establish and support an **Interim Secretariat** for GTOS. For the first two years this **Interim Secretariat** could be housed with one of the Sponsors while a more permanent home is sought.

25. To make GTOS better known, each of the sponsors should introduce GTOS to its Governing Body through a short information paper to be presented at the first possible

session of that body. This might result in supportive decisions which could, for example, favourably influence the attitudes of Convention Parties towards GTOS.

26. At an early stage GTOS should develop a publication programme so that its actions and findings become well known. This must be done in such a way that full credit is always given to co-operating countries and partner organisations. This is particularly important for programmes with the Conventions several of which already have their own publication programmes. Joint series publications is one approach that should be explored.

27. Financing GTOS Convention-related activities remains a problem. Some funds may be available through the financial mechanisms of the Conventions. Most funds will have to be sought from additional sources such as bilateral and multilateral donors and aid programmes, or from foundations. Consequently, funds for familiarisation and contact visits to potential funding sources should be made available to the GTOS Interim Secretariat through the Sponsors.

28. Familiarisation and contact visits to the major donors must be an early priority on-going activity of GTOS and its Sponsors. These can, if necessary, be arranged through the GTOS Sponsors. Potential donors should include CIDA, DANIDA, EU, FINNIDA, GTZ, IBRD, IDRC, NORAD, SIDA, UK-ODA, UNDP, USAID, and to some of the larger foundations such as Carnegie, Leverhume, Mellon, Rockefeller and Sasakawa. Familiarisation visits to other possible supporting countries such as Australia, Belgium, France, Italy, New Zealand, Switzerland and Russia should also be considered at a later time.

29. The GTOS Sponsors should at the earliest opportunity try to interest leading newly industrialised developing countries in supporting GTOS. Visits should be made to some to discuss their potential role in GTOS (e.g. Brazil, China, Indonesia, South Africa, and South Korea), with a view to soliciting their practical support.

30. GTOS project documents to go to donors, especially those to go through the Conventions, should have all costs properly and fully shown. Information, data and other practical benefits to national partners in the project should be clearly spelled out.

31. GTOS should plan its operations under the Conventions as a series of programme packages Each of which can be put separately to relevant donors. Each package before submission to a donor must have the prior agreement of the Convention Secretariat, the Scientific and Technical Committee of the Convention, the Conference of the Parties of the Convention, and the Governments of the countries where the work will take place.

2 BACKGROUND

Rationale

Current emphasis in environmental thinking is that renewable natural resources must be managed in a sustainable manner. In other words, such resources can, and should, be used by people but in ways that enable the resources to be perpetuated and not become exhausted or extinct. This view was the prevailing one at the United Nations Conference on Environment and Development (UNCED; Rio de Janeiro, 1991) and is that which runs through Agenda 21 which is now the accepted guide for national and international environment and development action in the post UNCED world.

To manage renewable natural resources properly, however, it is necessary to know the extent, state and present rate of change of each. How much is there? In what condition is it? Is it holding its own, or declining, or improving? Answers to these questions are vital for all those concerned with renewable natural resources whether it is at local, national or international levels. Such answers can only be provided by actual observations and measurements. These measurements provide the minimum set of information necessary for proper management of renewable natural resources.

These observed and measured changes are, however, mainly due to other factors that are affecting the state and well-being of the natural resources being managed. The forest is being depleted by settlers starting agricultural small holdings. Valuable farmland is being built upon. Soil is being eroded and redistributed because large numbers of livestock and wildlife are using the rangelands. Less (or more) rain has fallen in recent years, and temperatures are higher (or lower) than they used to be so that the vegetation is not growing like it did formerly. New plant species are appearing and old plant species are vanishing so that the vegetation resource to be managed now is not the same as the vegetation resource that was there a few decades ago. To understand these factors and their consequences requires additional sets of measurements and observations carried out over lengthy periods of time. Information on and appreciation of these factors, and there are many of them, will help managers of natural resources to better understand the changes that they see in the resources with which they are dealing. With this additional information they will become better, more efficient managers and the resources will benefit accordingly.

The renewable natural resources themselves are, however, largely composed of living organisms. Each of these organisms has its own way of responding to the changing environment in which it finds itself. Some species are genetically more variable than others and so can better and more rapidly adapt to changing conditions; thus they may flourish in new conditions. Others are more conservative in their structure and function and so do not adapt so easily; these may be under stress in new conditions and so may well disappear from a newly developed environment. To understand why this is so requires a new set of detailed measurements and observations at biological grouping, organism and cellular levels involving both biophysical and biochemical investigations along with careful measurements of local environmental conditions and their fluctuations over time. These studies enable a better understanding of the actual biophysical processes that govern the lives of organisms within each of the major renewable natural resource types. This in turn helps to better understand the responses of organisms to changes in

environmental conditions, no matter what the causes of those changes. It also helps in understanding, for example, why some natural resources in some localities are changing faster than others, why some crops (and livestock types) are flourishing and others not, and why some people in some rural areas can attain a better life style than people in other similar looking rural areas. Renewable natural resource managers do not have to know the details of these scientific investigations, or of how the biophysical processes work, but they must be aware of the findings and their implications for the renewable natural resources which they manage. Application of the findings enables resource managers to refine their management procedures and thus still further improve the condition of their renewable natural resources to the betterment of the lives of the people in and around these resource areas.

The basic measurement and observation set must be made at each specific area of concern. Any additional more detailed studies, however, will mostly have to be carried out at special, relevant long term study sites and the findings applied to the managed sites by extrapolation. In many cases such extrapolation is most effectively accomplished using space-based large-area remote sensing techniques to record land-cover and land-use at relevant scales.

Terrestrial observing system

This realistic approach to renewable natural resource management requires the co-operation of managers, development specialists, policy makers, economists and a wide variety of scientists and technicians. It also implies the existence of a widespread international terrestrial observing system to facilitate gathering of data at various measurement levels, carrying out of necessary analyses and interpretation, and provision of useful, reliable information for the utilisation and development of renewable natural resources in efficient and sustainable ways. Such a system would also contribute materially to scientific understanding of terrestrial ecosystems, and this, in turn, would help to generate better, more reliable and more useful information for the users of the system.

Such a world wide terrestrial observing system is not yet operational though similar observing systems are currently being developed for oceans and for global climate with the co-operation of interested governments and the sponsorship of UNESCO, UNEP, WMO and ICSU. There are several reasons why an international terrestrial observing system has not yet been developed even though the need for it has long been obvious to most people directly connected with managing renewable natural resources and with understanding the natural processes that govern the functions of terrestrial ecosystems. These include:

- renewable natural resources are located within national boundaries and so are the properties of the nation states concerned;

- utilisation of its renewable natural resources by a country usually has economic significance to that country. Countries, therefore, are often reluctant to have information on their natural resources released since its availability could adversely effect national marketing and resource utilisation strategies to the possible detriment of economic returns.

- large areas of the tropics and subtropics have relatively few facilities for the study of managed ecosystems and even fewer for the study of natural ecosystems.

- many people within countries with abundant renewable natural resources are not convinced that additional measurements and observations are needed for proper resource management and exploitation. They see additional observations as a costly and unnecessary way of gratifying scientists at the expense of ordinary people.

- it is difficult to organise and not easy to carry out.

By 1992 the need for a world wide terrestrial observing system had become generally recognised. Consequently, a meeting of interested parties was held in Fontainebleau, attended by representatives of international agencies and organisations including FAO, UNESCO, UNEP, WMO and ICSU. At this meeting it was agreed that such a system should be developed and that it should be called the Global Terrestrial Observing System (GTOS). It was also agreed that it was essential that the system be concerned with both managed and natural ecosystems, and that it must have practical value to the management and development of renewable natural resources, particularly those of developing countries. In other words, GTOS should contribute materially to the wellbeing of people, especially those in developing countries, by leading to an improvement in the utilisation and development of both managed (arable agricultural lands, rangelands and other pastoral areas, forests and woodlands, fresh waters, etc.) and natural ecosystems. It should also contribute materially to better scientific understanding of the biophysical processes involved in the form, function and change of ecosystems over time since this would further help in ensuring sustainable, efficient utilisation of renewable natural resources worldwide.

Subsequently, FAO, UNESCO, UNEP, WMO and ICSU agreed formally to sponsor GTOS. Several international expert meetings were held to lay the foundations of GTOS and to formulate its general philosophy and principles. An international ad hoc Scientific and Technical Planning Group was established to further develop these ideas and to make proposals for future implementation of GTOS. The report of this group is expected at the end of 1995.

Users

It is clear that there are many hundreds, if not thousands, of variables that could be measured by a worldwide terrestrial observing system. It is equally clear that if such a system is to have any practical usefulness the number of variables will have to be reduced to the relatively few that are of real use and significance to the users. The only practical route to achieve this is to determine first who are the likely users of the system, establish their information and data needs, and design the system accordingly. Thus the observing system would be user driven.

Ultimately, there are two major users: countries with large or economically important renewable natural resources, and the international scientific community. These two groups are too large in scope and too diverse in interests to allow, at least initially, the needed focus on practical orientation of the observing system. For GTOS to function

efficiently at its start smaller user groups with more readily defined and narrower information and data requirements need to be identified. One likely user group in this category was quite quickly recognised: the Secretariats and Parties of some of the environment related international conventions.

Accordingly, UNEP selected eight relevant international conventions and arranged for a consultant to visit the Secretariats of each to discuss with staff what they considered to be their information needs and those of the Parties to their Conventions. This Report is a record of these visits. The Conventions chosen by UNEP (listed in order of Convention adoption) are:

- **Convention on Wetlands of International Importance Especially as Waterfowl Habitat (Ramsar) (1971)**
- **Convention Concerning the Protection of the World Cultural and Natural Heritage (1972)**
- **Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) (1973)**
- **Convention on the Conservation of Migratory Species of Wild Animals (CMS) (1979)**
- **Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and Their Disposal (SBC) (1989)**
- **United Nations Framework Convention on Climate Change (1992)**
- **Convention on Biological Diversity (1992)**
- **United Nations Convention to Combat Desertification in Those Countries Experiencing Serious Drought and/or Desertification, Particularly in Africa (1994)**

Visits to the Secretariats of these Conventions were made between 18 September and 12 October 1995.

In addition it was considered expedient to discuss GTOS with relevant staff in each of the international organisations that sponsor GTOS to obtain their current views on its future development. Accordingly, visits were made to the Food and Agriculture Organization of the United Nations (FAO), United Nations Educational, Cultural and Scientific Organization (UNESCO), United Nations Environment Programme (UNEP), World Meteorological Organization (WMO), and the International Council of Scientific Unions (ICSU). Meetings were also held with the Chairman of the GTOS ad hoc Scientific and Technical Planning Group, staff of the Global Ocean Observing System (GOOS) Support Office at the Intergovernmental Oceanographic Commission, and the Joint Planning Office of the Global Climate Observing System (GCOS) at the World Meteorological Organisation. These discussions were held within the same time frame as the visits to the convention secretariats. A full list of all those consulted is given in Annex I.

3 THE CONVENTIONS

(see full report for the other conventions)

3.8 United Nations Convention to Combat Desertification in those countries Experiencing Serious Drought and/or Desertification, Particularly in Africa (1994)

The Convention

This international Convention was adopted in Paris on 17 June 1994. It will enter into force on 26 December 1996. [1]

As it has not entered into force the United Nations Convention to Combat Desertification is administered by an Interim Secretariat, headed by an Executive Secretary. This is currently located at the UNEP Geneva Executive Centre where it operates under the auspices of the United Nations Department of Policy Co-ordination and Sustainable Development. When the Convention enters into force a Permanent Secretariat will be established by the Conference of the Parties.

The International Negotiating Committee for Desertification (INCD) for the United Nations Convention to Combat Desertification will continue to meet about twice a year until the Convention enters into force. The INCD is developing recommendations for the first session of the Conference of the Parties (COP) which will become the policy and decision making body of the Convention when it enters into force. Special provision is made for international agencies and qualified non-governmental organisations to attend COP sessions and contribute to its work. Once the Convention enters into force the COP will meet at least annually for its first four sessions. As a subsidiary body of the Conference of the Parties an open-ended Committee on Science and Technology (CST) will be established to provide the COP with information and advice on scientific and technological matters relating to combatting desertification and mitigating the effects of drought. It will identify priorities for research and advise on joint research programmes for new technologies. Full Terms of Reference for the CST are currently being developed for consideration by the first session of the Conference of the Parties. The COP will be able to establish ad hoc Panels of Experts to advise through the CST on specific issues; these Panels will be composed of experts whose names are drawn from an approved roster.

Desertification as considered by the Convention is the degradation of land in arid, semi-arid and dry sub-humid areas. It is thought to be caused primarily by a combination of unsustainable human activities and climatic variability. The Convention aims to promote effective action to counter desertification and to mitigate the effects of recurrent serious droughts through innovative local programmes and supportive international partnerships. Countries affected by desertification will implement the Convention by developing and carrying out national, sub-regional and regional action programmes. Criteria for developing these programmes are detailed in the four regional implementation Annexes to the Convention. The four regions are Africa (considered first priority because that is

[1] By 13/3/97, 68 states had ratified the Convention

where desertification is thought to be most severe), Asia, Latin America and the Caribbean, and the Northern Mediterranean. Action programmes under the Convention will be developed through consultations among affected countries, donors, and intergovernmental and non-governmental organisations. This process should improve co-ordination and help to channel development assistance to where it can be most effective.

Funds available

No separate Trust Fund or other such funding arrangement will be established by the Convention to Combat Desertification, unlike the case in most other Conventions. Instead, at its first session, the Conference of the Parties will identify an existing organisation that will house a `Global Mechanism' for funding. This Mechanism will not actively administer funds. Instead it will co-ordinate, facilitate and otherwise support efforts to improve the effectiveness and efficiency in the use of existing sources of funds for combatting desertification, and will suggest other financing methods and other sources of financial assistance. As part of its facilitating role the Mechanism will prepare an inventory of relevant existing co-operation programmes. The largest source of funds for the work of the Convention is recognised as the affected countries themselves. Bilateral and multilateral aid and loans are the two biggest sources of external funding. Additional funds will come from UN agencies and organisations, development banks and other international financial institutions, non-governmental organisations and industry. Support for activities to combat desertification will be sought from the Global Environment Facility (GEF) for projects that are relevant to the three GEF focal areas (biological diversity, climate change, international waters). Voluntary contributions to support specific activities will also be sought from appropriate sources.

Links with other Conventions

The work of the Convention relates very closely to that of several other Conventions, particularly the United Nations Framework Convention on Climate Change and the Convention on Biological Diversity. It is expected that the Permanent Secretariat will develop close working links with these Conventions, including the development of joint programmes where these are appropriate. Article 8 of the Convention specifically calls for these joint programmes in the fields of research, systematic observation and information collection and exchange. Co-operation between the Convention to Combat Desertification and the Conventions on Climate Change and Biological Diversity is seen as an advantage by the Interim Secretariat because both the latter have access to the Global Environment Facility to support projects. The Interim Secretariat of the Convention is, therefore developing links with the other two Conventions at an informal level which can be followed up by the Permanent Secretariat as soon as it is established.

Needs from GTOS

The United Nations Convention to Combat Desertification is especially strong in calling for information collection and exchange, and systematic observations relevant to assessing the state and trends in desertification and the effectiveness of remedial measures. Article 16 is specifically on information collection, analysis and exchange. Parties are required:

> "...to integrate and co-ordinate the collection, analysis and exchange of relevant short term and long term data and information to ensure systematic observation of land degradation in affected areas and to understand better and assess the processes and effects of drought and desertification. This would help, *inter alia*, early warning and advance planning for periods of adverse climatic variation in a form suited for practical application by users at all levels; including especially local populations."

Article 16 calls specifically for Parties to strengthen the functioning of the global network of institutions for the collection, analysis and exchange of information as well as for systematic observation at all levels. Emphasis is given for the need to use compatible standards and systems; relevant data and stations, including those in remote areas; modern technology for the collection, transmission and assessment of data on land degradation; and to link national, subregional and regional data and information centres more closely with global information sources. Article 16 also requires that socio-economic data be collected and analysed and that these data should be properly integrated with physical and biological data. It also requires Parties to "...exchange and make fully, openly and promptly available information from all publicly available sources relevant to combatting desertification and mitigating the effects of drought."

Article 16 also calls upon Parties:

> "...to support and further develop bilateral and multilateral programmes and projects aimed at defining, conducting, assessing and financing the collection, analysis and exchange of data and information, including, *inter alia*, integrated sets of physical, biological, social and economic indicators."

Annex I of the Convention is concerned with the implementation of the Convention in Africa. Article 8 of Annex I requires that national action programmes, as appropriate, shall include measures to improve knowledge of desertification by promoting research and the collection, processing and exchange of information on the scientific, technical and socio-economic aspects of desertification. It also requires these national programmes to include measures to "...monitor and assess the effects of drought." This is to be done by developing strategies to evaluate the effects of natural climate variability on regional drought and desertification, improving early warning and response capacity, and "...monitoring and assessing ecological degradation to provide reliable and timely information on the process and dynamics of resource degradation in order to facilitate better policy formulations and responses."

The other three Annexes to the Convention (Asia; Latin America and the Caribbean; Northern Mediterranean) contain less detail than the Annex on Africa. Nevertheless, to varying degrees they call for National Action Programmes to include provision to survey the environment in affected areas, to assess the causes and consequences of desertification, and to strengthen or establish information, evaluation and early warning systems in afflicted regions.

The Committee on Science and Technology will oversee all technical and research oriented activities undertaken by the Parties under the terms of the Convention - this will

include inventory, observing, assessment and related activities. The Committee will not meet until the first session of the Conference of the Parties. The present Interim Secretariat cannot, therefore, undertake any significant work in this area or make any firm commitments until the Parties have formally agreed as to what is needed. The Interim Secretariat is, however, taking part on a very informal level in some activities that might have relevance to the future work of the Convention. GTOS is one such area.

The Interim Secretariat envisages three types of useful desertification data coming from GTOS:

- Data useful to the Parties to monitor the state and trends in desertification in their countries, and for monitoring the effectiveness of any remedial actions that may have been taken.

- Data useful to scientists for understanding desertification processes and for using in developing, testing and validating models.

- Data and information that can be used directly by local people, or which could be directly obtained by local people. This is especially important in the development and use of practical Early Warning Systems for detecting the onset of drought conditions, as exemplified by some of the work already being carried out in eastern Africa.

These data types are listed above according to the priority ranking assigned to them by the Interim Secretariat.

The view of the Interim Secretariat is that all monitoring and assessment work carried out under GTOS must have a strong element of practicality so that GTOS is not just science driven. The International Panel of Experts on Desertification (IPED), which advised the Secretariat during the process of negotiating the convention, stressed that, for proper understanding of desertification processes, it is important that good reliable basic data are gathered so that any remedial management and mitigation measures proposed will rest on a sound scientific base. Data gathering procedures should be modified for use in each country so that they are suitable for understanding the particular problems of that country. There should, however, be a common core of data for use in all desertification studies. GTOS could help to develop a minimum data set for use by the Parties of the Convention to Combat Desertification. This minimum core data set should comprise relatively few variables carefully chosen so that they give a realistic, scientifically based picture of the extent and state of desertification in the measurement area. By comparing these core data from desertification sites worldwide a meaningful picture of global desertification can be constructed. Changes over time would show trends in desertification.

IPED considered that minimum data sets to be collected under the Convention should include sets of relevant climate, soil, water, land-use and socio-economic variables. Climate data should be suitable for the computation of values down to district levels and should include albedo, solar radiation, rainfall (daily figures for further computation), temperature (daily maximum and minimum) air humidity (dew point), wind, dust, and hydrology (ground water, major surface waters). Soil and water variables should be those used by FAO in the Global Assessment of Human-Induced Soil Degradation (GLASOD) and other related projects. They should include indicators of wind and water erosion,

salinisation, alkalization, gypsification, water logging, and soil fertility. Data should be used for secondary data computation at the district level scale. Priority should be given to collecting as complete data sets as possible for this limited number of variables. The key land-use variables that are needed are current land-use, changes in land-use over ten year periods, crop yields of major staple crops, and numbers and types of livestock. Again these data are needed down to the district level. In the socio-economic area the critical variables needed are human population (including ten year population changes), human migration data (seasonal, annual), mortality rates (infants, adults), disease status (annual), income per capita, income distribution, sources of income, migration of livestock, market prices of staple foods (monthly, at selected markets), energy (type, availability, price). Wherever possible the entire minimum data set should be collected according to the standard procedures of the World Bank and the relevant United Nations Specialised Agencies (e.g. FAO, WHO, WMO).

The minimum data set outlined above is the top priority for data collection under the Convention and is to be undertaken for all desertification prone regions at the expense of more comprehensive data sets for limited areas. At times, however, GTOS could be called upon to produce a wide range of additional information for use by the Parties. Land-cover data would be very important. Land-use information should pay particular attention to methods of cultivation now in use including traditional forms, current soil conservation practices, methods of water harvesting and water spreading being used (or that have been abandoned) such as the traditional Iranian qanat systems. Pastoral observations should include information on current livestock management practices (seasonal movements, grazing/browsing regimes, watering methods and schedules) paying particular attention to how mixtures of livestock are managed and how different age classes of the same livestock type are treated. A wide range of soil data would also be of great value including soil particle sizes, buried soil horizons, overall erosion rates, rainfall penetrability, run off, soil moisture, plant rooting depth, and ground water availability and quality. Meteorological data collected at locations and time intervals sufficient to show the spatial and temporal distribution and variability of key elements would be important. A system of long term study sites would have to be established if basic biophysical data are to be collected for use in understanding the underlying environmental and ecological processes involved in desertification.

The Interim Secretariat believes it would be useful to have desertification and drought related data put in the form of spatially referenced maps at appropriate scales. These types of maps are particularly valuable for work in the field as they are readily understood by most field workers. Land-cover, land-use, soils, and weather data are some of the important variables that can be usefully put in map form. Such maps also make excellent teaching and training material.

The Secretariat considers that there is still a need for a sound, scientifically based assessment of global and regional desertification since none of those carried out in recent years has been satisfactory. The minimum data set to be gathered under GTOS in all desertified and desertifying areas would contribute materially to this assessment. Depending on how GTOS is established and operates it could be a major partner in this assessment, or even be responsible for the whole assessment.
The Interim Secretariat sees merit in exploring the possibility of a close working relationship develop between GTOS permanent secretariat of the Convention and the Convention Parties so that GTOS could play an important role in the work of the

Convention to Combat Desertification. At an early stage, therefore, GTOS should, either directly or indirectly through its sponsors, press for observer or some other participant status on the Committee on Science and Technology of the Convention.

The preliminary view of the Interim Secretariat is that it would be helpful, particularly in raising funding for GTOS activities from financial sources such as the GEF, to merge the three Global Observing Systems so that they could work together more effectively.

4 FINDINGS

All but one of the Secretariats of the eight selected Conventions expressed interest in obtaining terrestrial observation data through GTOS. Details of the data needs for each Convention, as far as could be determined, are given individually under each Convention.

The exception, the Secretariat of the United Nations Framework Convention on Climate Change, felt that many of its developing country Parties would consider the systematic collection of national environmental and renewable natural resource data too politically sensitive an issue for the Convention to take up at this stage. The Secretariat felt, however, that this attitude could well change in the long term future as more and more developing country Parties transformed themselves into newly industrialised states.

Another Convention Secretariat, that of the Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and Their Disposal, had some data needs that were very much more specialised than those of the other Conventions that were consulted. These specialised data are more fully outlined in the section on the Basel Convention but essentially there is a need to monitor the various toxic substances and chemicals that might find their way into the atmosphere, ground water, and food production systems from hazardous waste disposal sites such as land-fills and incinerators. If GTOS is to be involved in provision of these specialised data it would entail designing a subprogramme of GTOS specifically for the Basel Convention. However, the Basel Convention also needs general geographical and habitat data for the zones in and around areas where land-fill and incineration sites are located. These latter data types are identical to those that are needed for most of the other Conventions. A special problem facing the Secretariat and the Parties of the Basel Convention is to locate illegal land-fill sites. The Secretariat wondered, therefore, whether appropriately scaled spatially referenced geographical and habitat data supplied through GTOS could be used to identify potential areas in which illegal land-fill sites might be placed in the future.

The remaining six Conventions form a cluster whose interests and data needs overlap. In most cases observational data are required primarily for improved practical management of the sites, including their conservation.

The data needs of the seven Conventions, as seen by their Secretariats, fall into six broad groups:

- General site specific habitat data, including land-cover, land-use, ecological structure, and species composition. Data required are often detailed, and can include biophysical data for studies of environmental and ecological processes.

- General habitat data, as above, but for the zones in which Convention sites occur; includes extensive socio-economic data categories. Data are usually needed at broader scales than those for the Convention sites.

- Near surface weather data to establish diurnal, seasonal, and long term trends and patterns. The observation system should be suitable for use at both high and low latitudes and high and low altitudes.

- Data types not yet routinely incorporated into most broad observational programmes, e.g. crustal stress and tectonic movements; biological diversity assessments; population status and trends of particular species of plants and animals.

- Specific observations peculiar to individual Convention objectives e.g. seasonal weather front and pressure system data for use by the Convention on Migratory Species; measurements of specified toxic substances and chemicals for use by the Basel Convention.

- New fields for specialised observational programmes e.g. marine mammals, especially of the open oceans; coral reefs; intertidal coastal areas.

The spatially referenced data include a full range of land-cover and land-use information that would allow the Secretariats and the Parties to build up a picture of the large zone in which their particular sites are located. This information would allow them to develop effective, realistic management strategies and plans based on scientific knowledge of the environmental, ecological and developmental pressures that these areas and their contained sites are experiencing. The data required in this format are given in the sections on the individual Conventions.

Some Secretariats recognised the benefits to be gained from detailed studies of biophysical processes relevant to the ecology of each site or to its immediate vicinity, and would encourage GTOS to be able to supply data from such studies to those who can use them. Several of the Conventions are moving towards the development and testing of environmental, ecological and management models for which biophysical process data are important. These models would help to predict likely changes in ecosystems in response to environmental, ecological and human pressures and so would allow more practical, scientifically based management policies and plans to be formulated.

Without exception all the Secretariats in this group said that they (and by inference, their Parties) wanted to obtain through GTOS observational data that allowed them to note and measure habitat changes over time in order to show responses to changing conditions (including global change). The methods used by GTOS should allow distinctions to be made between changes arising from seasonality, short term variability, and long term trends. GTOS should, therefore, wherever possible use methods of data gathering and analysis that facilitate comparison between times at the same site and between sites where appropriate. A flexible approach to data collection, analysis, and management would

allow the use of several approved harmonised methods that would result in data of acceptable predetermined levels of accuracy and precision.

Many sites often relate to more than one Convention. For example, some specific wetlands are of concern to the World Heritage Convention, the Convention on Wetlands, the Convention on Migratory Species and possibly CITES. It is important, therefore, that GTOS should use harmonised data acquisition methods at all Convention related sites so that the same data types are passed to the different Conventions in the same formats thus encouraging the Conventions to work more closely together and facilitating comparisons between their various sites to the benefit of them all.

As there is so much overlap among these Conventions several Secretariats suggested that a minimum core set of carefully chosen sensitive variables should be developed by GTOS to be gathered at each site covered by any of the Conventions. The use of such a cross-Convention set of common variables would greatly aid in ensuring that information, data and predictive models could be shared usefully among the Conventions. The majority of other data gathered at each site would then relate specifically to the individual convention concerned.

Quality assurance procedures and quality control practices within GTOS are major concerns to all the Convention Secretariats. Can they and their Parties believe the data that are reported through GTOS? These concerns also include the need for GTOS to adopt harmonised methods for the measurement of variables, and to use accepted common definitions for the classification of some of them (e.g. soils, vegetation, taxa). The latter is particularly important for Conventions whose technical experts have already agreed on workable definitions or classifications for some variables; would these be at variance with those to be used by GTOS? The Convention on Wetlands, for example, already has an approved global classification of wetlands that rests in part on vegetation. Would GTOS use this classification in providing land-cover and habitat data to the Convention Secretariat? If not, would it be able to put its own land-cover and habitat data classes in terms of the wetlands classification that the Convention is now obliged to use?

The validity of extrapolating or otherwise applying data from long term GTOS study sites to those sites designated under the Conventions is another concern expressed by several Secretariats. This concern applies to both the general geographical and habitat data, and, in particular, to data on bio-physical processes. As there will be relatively few GTOS long term study locations they will often be at considerable distances from the Convention sites. The feeling of some Secretariats is, therefore, that data from these distant localities will not always be sufficiently relevant to the Convention sites.

Two potentially useful sectors were identified by several Secretariats as posing specific data gathering problems: tectonic earth movements and their consequent dangers; and the assessment and monitoring of biological diversity.

- Several Secretariats said that it was important to their Conventions that they should have a better understanding of the risks of future earth movements to their areas of interest. Sites were often at risk from earthquakes, volcanic eruptions, land-slides, mudslides and similar phenomena. Knowledge of the likelihood and possible consequences of such happenings would be of great help in developing practical management plans. Thus an appropriate observational programme within

GTOS for crustal stress, and tectonic movements and their consequences would be of practical use to several Conventions.

- There was a growing interest in being able to inventory the biological diversity of sites covered by the Conventions and then to subsequently monitor changes in this diversity in the long term. The methods to carry out such inventories are poorly understood and there are few trained staff, especially in developing countries, capable of undertaking them. If such inventories could be arranged through GTOS as part of its observation programme it would be welcomed.

Several Secretariats said that they lacked proper facilities to manage, analyse and interpret the data that are supplied to them by their Convention Parties. Indeed, the Basel Convention identified this as its most important single information and data need. Several others said that they would welcome advice from GTOS on the data management aspects of their work programmes. They asked that GTOS consider providing this advice both to them and to their parties. Essentially what is being requested is help to design a common data management programme that the Convention Secretariats and their Parties could all use. It was recognised by the Secretariats that it would be of benefit if the same data management systems were used by all seven of these Conventions since it would greatly increase the value and practicality of the information generated by them.

Similarly, all seven Secretariats recognise the importance of collecting land-cover, land-use and weather data in a spatially referenced manner and expressing these in the form of appropriately scaled spatially referenced maps. Such maps can be used easily by both management and scientific field staff for practical work, make excellent tools for training, and are a great help in public relations exercises to promote awareness of the purposes and work of the Conventions. The Secretariats have no way of directly undertaking this type of geographical information system work so that it would have to be done with donor funding on a contract basis through national Geographical Information System (GIS) facilities or outside GIS specialists (e.g. GRID, WCMC). This was recognised by most Secretariats, but it was felt that such arrangements could perhaps be best done under the auspices of GTOS.

Some Secretariats reported that their Conventions had been asked to produce global assessments of the state and trends of some natural resources, of concern to their Convention. Thus the Convention on Wetlands is to produce a global assessment of wetlands, the Convention to Combat Desertification is to produce a global assessment of desertification, and the Convention on Biological Diversity is responsible for assessments of selected taxa and habitats. All hope that data from GTOS will help in these exercises; some Secretariats went so far as to suggest that GTOS could take an active role in the assessment process.

There is thus considerable interest in GTOS and its products among the Secretariats of the Conventions contacted. Most see a real need for the kinds of information that could be provided through GTOS and think that it could greatly assist Convention Parties in meeting their obligations under the terms of the Conventions, particularly those developing countries that have as yet inadequately developed technical capabilities and still have a shortage of national technical staff. It is not yet clear how an operational GTOS would actually function and it now becomes a pressing matter to spell this out in a practical manner that can be readily understood by potential users of GTOS, such as the

Convention Secretariats. Hopefully, the new version of the GTOS proposal, to be ready by the end of December 1995, will help in this respect. However, until the GTOS Sponsors have decided how they would like to proceed with GTOS it is difficult to move further with the users.

GTOS is unquestionably a good idea whose time has come. Unfortunately, the Sponsors are not yet in a position to put in the money necessary to get GTOS off the ground. Nevertheless, the Sponsors must somehow find enough money to keep a small Interim Secretariat for GTOS functional for the next two years (1996-1997). In that period the Interim Secretariat must use its resources to build an awareness of GTOS and its potential. This can be done by the involvement of both the Interim Secretariat and the Sponsors in a series of contact missions to those with sufficient funds to start GTOS. By using their own staff and consultants in this way Sponsors can draw on financial sources additional to those that they have provided to the Interim Secretariat, so widening the financial base of GTOS. It might be worth considering beginning with visits (followed by proposals) to some of the larger foundations such as Carnegie, Leverhume, Mellon, Rockefeller and Sasakawa to seek once-only start-up grants for an establishment period of GTOS. This is how the Monitoring and Assessment Research Centre (MARC) began its career. These visits should go along with two-way familiarisation visits to potential financially supporting agencies as outlined in the next chapter. These actions will help to enhance the reputation of GTOS and make it more appealing to many potential users, such as the Convention Secretariats, so encouraging them to support GTOS financially.

5 GTOS SHORT TERM STRATEGY

As yet GTOS has no agreed form. It is difficult to consider in detail any of its functions without an understanding of the form which it will take. This point was raised by all the Convention Secretariats. Form and function are not the same thing and they cannot be interchanged satisfactorily.

> **RECOMMENDATION 1:** A full-time **Interim Secretariat** should be established and staffed by the Sponsors as soon as possible for an initial period of not less than two years. It should have a professional staff of at least two with General Service support. A more Permanent Secretariat (perhaps supported from other funding sources) can be negotiated by the Sponsors at a later date.

It is important to spread the word about GTOS as widely as possible so that Governments, particularly those of developing countries rapidly become aware of what GTOS is, what it does, and the benefits that can come from working with or through it. The Governing Bodies of the Sponsors provide one means of getting this message to Governments. If an Information Paper on GTOS was to be put before the Governing Body of each of the Sponsors it could result in supportive decisions from those Bodies. For example, if the paper is properly constructed so that GTOS is seen in the context of the work programmes of both the agency and the Conventions, it could result in a decision from that Governing Body calling upon Parties to relevant Conventions to take note of GTOS activities and to support them whenever appropriate.

RECOMMENDATION 2: Each of the Sponsors of GTOS should introduce GTOS to its Governing Body through a short Information Paper to be presented at the first possible session of that Body.

At an early stage GTOS should develop a carefully thought out, attractive but cost effective publication programme. This will help GTOS to establish its name since GTOS actions and findings will become well known. This must be done in such a way that full credit is always given to co-operating countries and partner organisations. This is particularly important when working with the Conventions which mostly already have their own publication series. Disputes over publication procedure is one of the most disruptive elements of co-operative ventures between organisations. Any Letter of Agreement, Memorandum of Understanding or project document should always make clear what is to be done about publications so as to avoid disputes later. Joint series publications is one approach that should be explored.

RECOMMENDATION 3: At an early stage GTOS should develop a well thought out, attractive but cost effective publication programme designed in such a way that full credit is always given to co-operating countries and organisations.

Most of the Convention Secretariats said that many developing countries are basically not in favour of monitoring or observational systems. These countries see the distribution or communication of national data as an actual or potential infringement of national sovereignty. This is regarded by some Secretariats as a major practical constraint to developing an operational GTOS. However, several large developing countries have already made the transition to a mainly industrial economy (e.g. Brazil, China, India, Indonesia) while many others are well on their way to achieving this state. These newly industrialised countries are already beginning to see the advantages of an observational system such as GTOS; several (e.g. China) have established their own national monitoring programmes. They might, therefore, now be more sympathetic towards GTOS. It is known, for example, that China would like to participate in GTOS through the Chinese CERN programme; this might provide a starting point for more substantive discussions with China about GTOS. If some or all of these newly industrialised countries would openly express support for GTOS it would help in getting developing countries to do the same. It would be particularly useful if each could be persuaded to provide $200,000 to GTOS for the first two to three years of its operation.

RECOMMENDATION 4: The GTOS Sponsors should at the earliest opportunity try to interest leading newly industrialised developing countries to support GTOS. Visits should be made to some to discuss their potential role in GTOS (say to Brazil, China, Indonesia, South Africa, and South Korea), with a view to soliciting their practical support to GTOS.

There is little doubt that a terrestrial observing system such as GTOS will be of very great practical and scientific value to each of the seven international Convention discussed here. The Secretariats have all said as much. Based on the responses of this selection of Conventions it is likely that there are other international and regional Conventions that would profit from a similar association with GTOS.

RECOMMENDATION 5: GTOS should consider other Conventions as possible GTOS users, especially the regional Conventions whose interests touch upon the global Conventions discussed in this report. Contact should be made with them.

Most Convention-related GTOS activities will occur within states that are Parties to the Convention and will be carried out through their national agencies. Ensuring that this is done according to agreed harmonised GTOS methods and protocols will not be too difficult to arrange for developed country Parties. For some developing country Parties, however, it may be necessary to create the entire system. If this is the case, funds will have to be sought from elsewhere (bilateral aid, multilateral aid, foundations, etc.) on a case by case basis. It is for these reasons as much as any other that it is important that GTOS not be overambitious at the start so that costs can be kept low; it should start simply and build as far as is possible upon what is already there.

RECOMMENDATION 6: For reasons of cost and practicality GTOS should begin its operations modestly starting simply, and building as much as possible on facilities and systems that are already in place.

In order to facilitate the comparability and compatibility of data from similar sites at different times, GTOS should develop a minimum set of variables that will be measured directly at each site. This will help to make more obvious any similar changes that have taken place at most sites due to environmental, ecological and management pressures.

RECOMMENDATION 7: GTOS should establish a core minimum set of variables to be measured at each site to agreed levels of accuracy and precision and at agreed time intervals appropriate to each variable.

All the Convention Secretariats have asked for more data types than is practical for GTOS to obtain, and certainly more data than they really need. GTOS should, therefore, examine very carefully the data needs of each Convention in order to reduce the number of variables to be measured to relatively few of sufficient meaning and sensitivity that they will give a proper understanding of what is happening; if this is done correctly it will also allow informed inferences to be made about the behaviour of the unmeasured variables. This approach is the only practical one for GTOS as its work load, especially in the early years, must be kept within reasonable bounds.

RECOMMENDATION 8: GTOS should carefully review the data needs of each Convention with a view to reducing the number of variables to be measured to the minimum necessary for obtaining a proper understanding of what is happening at each series of Convention sites.

Most of the Convention Secretariats call for GTOS to adopt standard methods and protocols for the measurement of variables. The reason for this is the perfectly laudable one of trying to ensure that data from GTOS are compatible and comparable throughout GTOS, which would facilitate common data usage. Few data measurement methods, however, can be employed satisfactorily in all locations and under all conditions. It is more flexible and practical, therefore, to have an agreed harmonised set of methods that will result in data of predetermined acceptable levels of accuracy and precision. This approach really would contribute to data compatibility and comparability.

RECOMMENDATION 9: GTOS should develop harmonised sets of methods for measuring variables so that data have agreed acceptable levels of accuracy and precision so helping to ensure data compatibility and comparability.

GTOS users need to know about the existence of data runs relevant to particular areas and types of investigations. In order to maximise the benefits of using such data, users also need to know the history of these data. Why were they measured? How were they measured? Who did the measuring? At an early stage, therefore, GTOS should start to put together a catalogue of available relevant data. At the same time GTOS should start a metadatabase and make it available to GTOS users worldwide. This is essential if harmonised methods for data gathering, analysis and management are to be used. Harmonisation is an important part of quality assurance and quality control procedures, the need for which was stressed by most Convention Secretariats. Harmonisation activities should form an on-going element of the GTOS programme for which separate funding should be sought.

RECOMMENDATION 10: As parts of its harmonisation programme GTOS should assemble a *`Catalogue of Available Relevant Data'* and an on-going historical metadatabase. Funding should be sought for a GTOS harmonisation programme that encompasses these elements.

Several Convention Secretariats suggested that it would be useful if GTOS could recommend data management procedures that would be common to all GTOS users. The six Conventions that deal with renewable natural resources thought, since their areas of interest were so closely related, that a data management system common to them all would be useful even if that system is not adopted by all other GTOS users. It would enable them to exchange data readily and co-operate more efficiently in joint activities.

RECOMMENDATION 11: GTOS should develop an observational data management system common to all the Convention Secretariats and which they can recommend to their Parties.

Developing countries are often unable to bridge the gap between the collection of observation data and, after analysis, using them for management and for setting policies. It is important for the long term future of GTOS that this gap is removed or narrowed whenever it is encountered.

RECOMMENDATION 12: GTOS, together with the Convention Secretariats involved, and any co-operating agencies, should assist developing countries to utilise observational data for resource management and policy making by advising on needed national infrastructure, staffing, and training.

The need for training within GTOS was mentioned by several Convention Secretariats since there is often a shortage of trained technicians in developing countries. GTOS can and should advise on technician training needs, it can even develop appropriate job descriptions, but it should not attempt to provide any training programmes. Where necessary, however, training elements should be built into GTOS projects for which external funding is to be sought. UNITAR may be able to assist in this respect.

RECOMMENDATION 13: GTOS should include training elements in projects for which funding is to be sought. GTOS should not itself offer direct training.

Conventions need data that relate directly to their particular sites and the zone or zones in which those sites are set. Existing GTOS stations may not be near Convention sites. How to relate data from distant GTOS stations to Convention sites in a meaningful way is a concern to several Convention Secretariats. GTOS will thus either have to extrapolate from its own relevant stations, or it will have to assist the Government and the Convention to establish GTOS observation stations in the site area. For the studies required at many Convention sites the establishment of new GTOS stations would be the most practical approach, though this would vary from site to site. A cluster approach which linked several Convention sites to a major GTOS station might be one procedure to explore.

RECOMMENDATION 14: GTOS should demonstrate to potential users the relevance of data from GTOS stations distant from Convention sites.

Land-cover and land-use data for the zone within which particular Convention sites are located are needed by nearly all the Conventions. This information is usually requested as either zone specific spatially referenced data, or spatially referenced maps. How to obtain these data in a meaningful way is a concern to Secretariats. This sort of information can be extrapolated from GTOS Tier 5 indirect activities provided that suitable verification and ground sampling can be done in the site areas by national scientists or GTOS field teams. Preparation of the maps would have to be by contract with either national GIS facilities, or with outside GIS centres (e.g. GRID, WCMC). Funding would be from external donors in most cases.

RECOMMENDATION 15: GTOS should consider procedures for supplying users with spatially referenced maps of variables for sites and zones at specified scales since this is one of the data forms most requested by Conventions.

At an early stage GTOS must develop a data release policy. GTOS is dealing with information and data about which all countries are very sensitive. It must, therefore, be clearly understood by all parties to GTOS exactly what can and cannot be done with information and data gathered under the auspices of GTOS. This policy must also consider secondary data generated through the analysis and transformation of primary data, often outside the countries where the primary data were obtained. A data release policy is very difficult to develop and should not be rushed.

RECOMMENDATION 16: At an early stage GTOS should begin to develop a data release policy for primary and secondary data gathered or developed under the auspices of GTOS.

GTOS has no firm funding. The Convention Secretariats quite rightly found it difficult to comprehend how a body could work with them to ensure data acquisition in the field when it had no firm financial basis. A lot can and should be done by building on existing facilities both in the field and in operational co-operative organisations as has been proposed by the GTOS ad hoc Scientific and Technical Planning Group. This can only be accomplished by discussions, visits to co-operating organisations, and some small expert group consultations. An indication of some firm financial backing from the Sponsors (say

$100,000 per year) specifically for these visits would go a long way towards reassuring the Convention Secretariats that GTOS is a serious proposition; this would help to unlock Convention financial support for Convention-related GTOS activities.

> **RECOMMENDATION 17:** Funds from the GTOS Sponsors, or arranged through them, should be made available to the GTOS Interim Secretariat for familiarisation visits to potential co-operating organisations and countries, and for holding some small expert consultations.

As GTOS will rest very heavily on support from donors it is important that at an early stage GTOS discuss its aims, objectives and work programme with each of the major bilateral, multilateral and foundation donors. This should be a two way exchange of information. The donors would become informed about GTOS, but, perhaps more importantly, GTOS would learn about the donor agencies and what each can and cannot do under its Terms of Reference. Each donor has its own list of preferred countries which it will support; some will only support large projects, others only small projects; some can approve projects quickly, others take much longer; some will only support agricultural projects, others will give priority to other forms of sustainable land-use, including conservation. GTOS must know how to approach these donors and what forms of documentation are needed for each.

> **RECOMMENDATION 18:** Familiarisation and contact visits to the major donors should be an early priority for GTOS. These can, if necessary, be arranged through the GTOS Sponsors. Potential donors should include CIDA, DANIDA, EU, FINNIDA, GTZ, IBRD, IDRC, NORAD, SIDA, UK-ODA, UNDP and USAID. Familiarisation visits to other possible supporting countries such as Australia, Belgium, France, Italy, New Zealand, Switzerland and Russia should also be considered at a later time.

Any proposal to go to a Convention Conference of the Parties should have all the cost implications shown together with clear indications of the kinds of information, data, data products, and other benefits that can be expected. This is particularly important if some GTOS activities are to be considered for funding through special funds within Conventions. The Secretariats of most Conventions do not have large funds available to them so that they will probably only be able to provide token support to GTOS. An indication of Convention funds and funding mechanisms is given in this report as part of the outline of each Convention.

> **RECOMMENDATION 19:** GTOS project documents to go to donors, especially those to go through the Conventions, should have all costs properly and fully shown. All information, data and other practical benefits from the project should be clearly spelled out.

Most of the Secretariats at first regarded GTOS as a separate data gathering agency which could help the Conventions get the data that the Parties need or which the Parties are obliged to communicate under the terms of their Convention. Thus initially GTOS was thought of as having its own funding, sources of support, and technical capabilities. Only later did most realise that GTOS lacked these capabilities and needed financial support from a variety of sources including from, or through, the Conventions themselves. In spite of this realisation the Secretariats remained sympathetic towards GTOS. Most

Secretariats considered that some funding for GTOS could be obtained directly through the financial mechanisms of the Conventions, but nevertheless thought that most should be sought from donors in the form of aid to national project or programme proposals that had first been formally approved by the Conference of Parties. The COP need only approve the programme of which the individual projects or activities form a part.

> **RECOMMENDATION 20:** GTOS should plan its operations under the Conventions as a series of programme packages each of which can be put to relevant donors separately. Each package before submission to a donor must have the prior agreement of the Convention Secretariat, the Scientific and Technical Committee of the Convention, the Conference of the Parties of the Convention, and the Governments of the countries where the work will take place.

Conventions that have been operating for some years have an easier working relationship between Secretariat and Parties than do more recently adopted Conventions. Consequently, the Parties of older Conventions tend to pay more attention to suggestions for the work programme originating from the Secretariat than do Parties of the more recent Conventions. In the older Conventions, therefore, GTOS and the Secretariats should work together quite closely in the development of GTOS proposals.

> **RECOMMENDATION 21:** GTOS should work very closely with the Secretariats of well established Conventions to draw up relevant GTOS project proposals.

Getting formal approval of a Conference of the Parties may, however, not be as simple as it might at first seem. Many developing countries see any inventory or observing activities as an infringement of their national sovereignty, even when these activities are carried out by their own nationals and agencies; communicating national data to others is often regarded as a particularly unwelcome infringement of national rights and to be resisted even though the Convention to which they are Parties might require that it be done. A Conference of the Parties may, therefore, have built in scepticism about any form of observing system. Consequently, great care must be exercised in presenting GTOS proposals to ensure that the practical economic benefits of participation in GTOS are obvious to the Parties. It is essential, therefore, that GTOS proposals go to the COP with the full and enthusiastic backing of the Scientific and Technical Committee of the Convention. Each committee is usually made up of government experts appointed by the Parties from a Roster of Experts that the COP has already approved. The Committee, therefore, is conversant with the views of the Parties and will, if it agrees with the proposal, be able to suggest ways of presentation that might make the proposal more attractive to a COP. The composition of these Committees changes every two to three years so that contact by GTOS must be kept up and not left at a once-only level.

> **RECOMMENDATION 22:** GTOS must work through the project approval process of each Convention. It is particularly important in this respect that GTOS establish good working relations with each of the Scientific and Technical Committees of the Conventions.

In the newer Conventions which are still in the process of establishing how they will work it is important, where the rules allow, that GTOS establish some sort of observer status on the Scientific and Technical Committees. This might be done directly through the GTOS

Interim Secretariat or through one of the sponsoring organisations. The presence of GTOS on the Committee at an early stage will help Committee members to become familiar with GTOS before the Committee has to start considering proposals from GTOS. The advantages of precognition were shown during the present series of visits to Convention Secretariats; one Secretariat said that "... GTOS cannot be worthwhile to the Convention because if it was we would have heard of it before - and we have not."

> **RECOMMENDATION 23:** GTOS should obtain observer status on the Scientific and Technical Committees of relevant Conventions, especially the newer ones that are still developing their work programme and operating methods.

Two new Conventions can be of great importance to the future of GTOS, namely the Convention to Combat Desertification, and the Convention on Biological Diversity. Both these Conventions are just beginning to develop their programmes. GTOS should, as soon as possible, press for observer status on the Scientific and Technical Committee of each. Sponsors of GTOS should ensure that there are sufficient travel funds to allow regular GTOS representation at meetings of the two Scientific and Technical Committees, particularly during the formative first years. GTOS should in addition ask representatives from the two Secretariats (or from the two Committees) to attend some GTOS work programme planning meetings to ensure that from the start the needs of these two Conventions are adequately reflected in GTOS.

> **RECOMMENDATION 24:** GTOS should regularly attend meetings of the Scientific and Technical Committees of the Convention to Combat Desertification and the Convention on Biological Diversity. Representatives of both these Committees should be invited to attend some GTOS programming meetings.