UNISIST

REPORT ON THE EVALUATION OF

INFOterra

FOR THE

UNITED NATIONS ENVIRONMENT

PROGRAMME

UNESCO

UNITED NATIONS EDUCATIONAL,
SCIENTIFIC AND CULTURAL ORGANIZATION

REPORT ON THE EVALUATION OF INFOTERRA
FOR THE UNITED NATIONS ENVIRONMENT
PROGRAMME

Prepared by John Martyn
with the collaboration of an international
Evaluation Team and the methodological
support of Unesco

PREFACE OF UNEP AND UNESCO

On 26 March 1979 the Executive Director of the United Nations Environment Programme invited Unesco, within the framework of its General Information Programme, to participate in the evaluation of INFOTERRA which was planned by UNEP for presentation to its Governing Council in May 1981. In view of the continuing role of Unesco in providing the UNISIST framework for the development of information systems and services within the United Nations system and notably its experience in conducting evaluation of international information systems, the Director-General of Unesco accepted this invitation. In a subsequent agreement, the responsibility of Unesco in this collaboration was defined as follows:

(1) Development of the strategy and methodological framework for the evaluation, under contract to the team leader of the evaluation and in close consultation with UNEP.

(2) Advice to UNEP on the composition of the Evaluation Team, as well as collaboration in the subsequent conduct of the evaluation itself which was ensured through the active participation of members of the Unesco Secretariat in the joint meetings of the Team and the INFOTERRA Advisory Group.

(3) Limited financial assistance to the evaluation, within the framework of the Approved Programme and Budget of Unesco for 1979-1980.

UNEP, paying full attention to the suggestions made by Unesco, assumed full responsibility for the selection of the Evaluation Team, administration of the evaluation and preparation of the report.

However, in conformity with the intention of UNEP and Unesco the views presented in the report are those of the team leader, Mr J. Martyn (Research Consultant, Aslib Research and Consultancy, London) in his personal capacity and in consultation with the other members of the Evaluation Team, and are not necessarily those of either UNEP or Unesco.

NOTES

The designations employed and the presentation of the material in this publication do not imply the expression of any opinion whatsoever on the part of the Secretariat of the United Nations concerning the legal status of any country, territory, city or area, or of its authorities, or concerning the delimitation of its frontiers or boundaries.

References to dollars ($) are to United States dollars.

ABBREVIATIONS

HABITAT	United Nations Centre for Human Settlements
IOB	Inter-Organization Board for Information Systems
IOC	Intergovernmental Oceanographic Commission
UNEP	United Nations Environment Programme
UNESCO	United Nations Educational, Scientific and Cultural Organization
UNIDO	United Nations Industrial Development Organization
UNISIST	World Information System for Science and Technology

REPORT ON THE EVALUATION OF INFOTERRA

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REPORT ON THE EVALUATION OF INFOTERRA

EXECUTIVE SUMMARY

INTRODUCTION

At the request of the Infoterra Programme Activity Centre as
endorsed by the 1979 Infoterra II meeting in Moscow, an independent
evaluation of Infoterra was organized with the assistance of UNESCO.
An Evaluation Team of seven information specialists was appointed in
March, 1980. Members of the Evaluation Team conducted interviews
with national focal point staffs, users and sources from thirty-
seven countries, and postal questionnaires were distributed to other
participating countries. Further information was obtained by study
visits to the Programme Activity Centre in Nairobi and the Computer
Unit in Geneva, and by attendance at regional Infoterra meetings in
Dublin (March 1980) and Dalien, China (August, 1980).

SUMMARY OF FINDINGS

The Infoterra network is a mechanism for inter-connecting users
of environmental information with sources of such information in
their own or other countries. It has focal points in a hundred and
ten countries, and has registered some eight thousand five hundred
sources of information in seventy-nine countries. It is under-used
at present, because it has been in operation for too short a time to
allow the development of a sufficient awareness of its services in
the community for which it was designed. However, there is evidence
that the referral mechanism works sufficiently well to be valuable
tool of international information exchange, and that if development
of the Infoterra system continues, its rate of use should increase
substantially. Infoterra has had some success in stimulating an
awareness of environmental problems, and the value of information in
meeting them, and has contributed to the development of national
capabilities for handling environmental information. The majority
of participating countries believe the benefits of participation to
outweigh their costs, and it is felt that Infoterra's successes in
facilitating information flow and in contributing to the achievement
of the goals of UNEP justify its continued support.

On the evidence of a number of users of Infoterra, the referral
mechanism has been shown to perform as well as bibliographic
information systems in producing useful information in response to
users' enquiries.

It is complementary to bibliographic systems, which conventionally produce documents or references to documents, because it provides access to unpublished information, or information and expertise which is otherwise difficult to acquire. It operates at low cost to the user, and is of direct value in promoting international relationships. Its major drawback is it slowness, because at present it depends largely on postal services. This deficiency could be overcome by the widespread availability of faster and more reliable means of communication.

The strongest factor inhibiting the growth of Infoterra use is the general lack of awareness of the use and value of environmental information, and specifically of the services provided by Infoterra. Considerably more promotional effort is needed at national and internatonal levels if this lack of awareness is to be overcome. It is considered that greater penetration, and possibly economies of effort, could be realised if promotion were to be undertaken in co-operation with other United Nations information systems. One specific community which should be stimulated into making greater use of Infoterra is the Infoterra sources themselves: another is the headquarters and regional office staffs of UNEP.

The commitment by partner countries varies considerably, and in general national focal points are under-provided with resources for the proper execution of their role. Of the existing focal points, approximately half are functioning effectively, some are functioning at a token level only, and some are for all practical purposes non-effective. This is in part attributable to a lack of commitment to participation in Infoterra and in part a reflection of the lack of resources, including trained staff.

In common with the majority of national focal points and of users, the Evaluation Team believe that Infoterra should now move beyond provision of referral services only, towards the provision of some substantive information to users. This development would involve staff who would be trained information specialists in the Infoterra operations to the benefit of those operations; would produce a higher level of user satisfaction, which would result in greater use of Infoterra; would encourage the development of environmental awareness by providing better information services; and would greatly assist the development of national information-handling infrastructures (within the framework of the UNISIST concept) which would further benefit the environmental community. This development would entail the provision of training facilities for national focal point staffs and this could most effectively be provided in co-operation with UNESCO and other information-supplying agencies in the United Nations system.

Much of the activity of the Programme Activity Centre so far has been devoted to securing the participation of countries in Infoterra by nominating national focal points, and encouraging those focal points to build up the numbers of their listed national sources. While accepting that, in a decentralized network, the decision whether or not to include a particular source must be at the member country's discretion, it is clear that the sources currently listed are uneven in quality. A degree of quality control should be introduced, preferably by more rigorous specification of the criteria for inclusion in the Directory. Focal points should also be encouraged to maintain closer contact with their national sources, in order to sustain a degree of commitment to the system.

CONCLUSIONS

UNEP was mandated by the Stockholm Conference to organize an international referral service for sources of environmental information: later decisions of the Governing Council of UNEP endorsed the development of Infoterra as a co-operative and decentralized network of national focal points, with UNEP playing a coordinating and catalytic role. Infoterra now, (February, 1981) exists as a network with 110 national focal points, more than any other international information service with the exceptions of UNIDO/Industrial Information System and the World Weather Watch, and publishes a Directory listing some 8466 sources of information in 79 countries. This is a considerable achievement and a justification of the effort which has been put into the design and implementation of the network. It can therefore be said that the original mandate has been fulfilled in terms of the existence of the structure which was required to be created.

There were, however, no levels of performance specified in the mandate against which achieved performance could be measured. Considered as a whole, Infoterra can truly be said to be an effective network, but elements of the network vary considerably in their contribution to the whole. Many of the focal points are not yet effective for reasons which include lack of adequate support given to the system in some countries, lack of trained professional staff, and a general unawareness of the value of environmental (and other) information.

The level of use is also low, although it should be remembered that Infoterra was not designed to replace any existing systems, but to supplement them and to fill a perceived gap in information provision. As has been pointed out in the main body of the report, it takes a number of years for the use of a new information system to build up to a satisfactory level, so that too much weight should not be given to the present use rates, except in so far as they justify the very evident need for more, and more intensive, promotion of Infoterra at the national level.

Considered solely as an information system, Infoterra functions satisfactorily in terms of its ability to provide information, although the time taken to receive substantive information in response to an enquiry is longer than is desirable. No formal assessment of efficiency of the system (that is, a study of whether the visible system outputs could be produced at lower cost within the United Nations framework) is practicable at the present time because the system is still in a development stage and it is not possible to isolate development and operational costs. However, it seems reasonable to assume that when the network is fully developed and the routines of source registration and query handling are well established throughout the whole system, Infoterra has a high probability of operating at a satisfactory level of efficiency. Cost-effectiveness analysis is also impractical, inasmuch as this would involve consideration of whether alternative systems for securing the same system goals (for example, the provision of access to information sources) could be operated more cheaply, and it is difficult to conceptualize a method which would operate as effectively as, but more cheaply than, the referral method as used by Infoterra.

Although in a strict sense cost-benefit analysis is also impracticable, as this would require reducing the global benefits from Infoterra operations to a cash value basis and comparing them to the capital cost of producing these benefits, nevertheless it is possible to make some comments on this topic. It is strongly felt that Infoterra benefits to be considered should include not only the information system activities per se, but also its effects in promoting development of national infrastructures for handling environmental information, in promoting international information exchange and in developing a worldwide awareness of environmental problems and the role of information in answering those problems. These aspects are not easily measured but there are substantial indications that (although most successful when able to be integrated into existing well-developed national structures, as in the Eastern European region) some progress has been made in creating nuclei of national environmental information systems. There is more evidence to support the finding that individual contacts between users and suppliers of environmental information have been strengthened, to the extent that if Infoterra were to be formally dismantled as an international system, the relationships built up in, for example, Eastern Asia and in Latin America would continue to exist and develop.

There is also some evidence to suggest that environmental awareness is growing, although the extent to which this can be assigned to the influence of Infoterra is uncertain. On these grounds, and taking into consideration the benefits associated solely with the information system aspects, it is considered that the over-all benefits of Infoterra operations to date, in terms of contribution to the goals of UNEP, have been worth their cost to the UNEP budget.

It should also be noted that all but a very few of the focal points responding to the questionnaire stated that they believed the benefits their countries hade derived from Infoterra had been worth the (admittedly often low) cost of Infoterra involvement to those countries.

SUMMARY OF RECOMMENDATIONS [1]

A number of recommendations follow which collectively imply substantial development of Infoterra at all levels, based on the existing structure of the system. Within the scope of the present report, and given the time constraints imposed on the Evaluation Team, it is not possible to do more than indicate the directions of change, leaving much of the detailed implementation tactics to be worked out by another body, in the light of UNEP priorities and available resources. The recommendations are presented under the headings of future strategy, promotion of Infoterra, national focal points, the Programme Activity Centre, system tools and elements, and links with other systems. All the recommendations are considered to be necessary for the improvement and successful development of Infoterra, but within each group the recommendations are presented roughly in descending order of importance.

It should be borne in mind that the necessary changes envisaged are not seen as being brought about by UNEP alone. They are evolutionary changes which must take place as a result of co-operative actions between UNEP, acting as a guide and support, and the Infoterra partner countries acting in a spirit of enlightened self-interest.

Future Strategy

1. It is recommended that Infoterra activities continue to be supported by UNEP.

2. The Infoterra network should move beyond referral towards provision on a decentralized basis by focal points of some substantive information.

3. Infoterra national focal points should be grouped in regions, with one focal point in each group acting as a regional centre for resource-sharing purposes.

4. Ways should be sought to improve Communications within the Infoterra network.

5. Centres with particular expertise should be designated as Infoterra sectoral focal points.

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[1] The full text of the recommendations is given on pages 75-82

Promotion of Infoterra

6. Increased effort should be devoted by the network to promoting the use of Infoterra.

7. Promotional activities should be undertaken in co-operation with other United Nations agencies.

8. Infoterra services should be promoted through librarians and information workers.

9. UNEP and other United Nations agencies should make greater use of Infoterra.

10. Libraries and documentation centres should be given the opportunity to purchase the Infoterra Directory.

11. Newly registered sources should be requested to put a question to the Infoterra system in order to promote the use of Infoterra by the sources.

National focal points.

12. Governments designating national focal points should provide adequate resources to ensure their effectiveness and full functioning.

13. National focal points should generally be located in or near environmental information services, and governments should review focal point performance regularly.

14. National focal points should be encouraged to build up, or ensure access to, environmentally-related document collections.

15. National focal points should maintain closer contact with their sources and users, posibly by issuing newsletters and national directories.

16. Regional and global meetings of the Infoterra network should be continued.

17. Focal points should submit to the Programme Activity Centre, brief annual reports of their activities.

The Programme Activity Centre.

18. The Programme Activity Centre should include, preferably by addition, two experienced information scientists to advise and assist the network in developing the recommended capacity for delivery of substantive information.

19. The Programme Activity Centre should be given improved access to environmental information tools, including indexing and abstracting journals and on-line services.

20. The Programme Activity Centre, in co-operation with other United Nations agencies, should offer basic training in information handling procedures to focal point staff.

21. The access of of focal points to UNEP and other environmentally-related documents should be improved.

22. Occasional guides to sources of bibliographic information and documents should be produced by the Programme Activity Centre.

23. The Infoterra Bulletin should be continued and further developed.

System tools and elements

24. The criteria for registration of sources should be made firmer and more explicit.

25. The list of attributes used for storage and retrieval in the Infoterra system should be further improved.

26. The Infoterra Directory should be published biennially with six-monthly supplements.

27. The Infoterra Operations Manual should be rewritten to bring it up to date.

28. Support should be given for expert groups as necessary in planning Infoterra development.

Links with other systems

29. Proposals for new United Nations information systems should be reviewed in the light of the scope of Infoterra in order to prevent duplication of efforts.

30. Infoterra national focal points should strengthen their links with national and international information systems in their countries.

31. Infoterra should continue to co-operate, as appropriate, with other United Nations information systems.

PART 1. INTRODUCTION

Introduction and background

Recommendation 101 of the United Nations Conference on the Human Environment, which was held in Stockholm in June 1972, recommended "that the Secretary-General take the appropriate steps, including the convening of an expert meeting, to organize an International Referral Service for sources of environmental information....". Shortly afterwards, in September 1972 an intergovernmental expert group met to discuss proposals for establishing an international referral system. The establishment of such a system became one of the original priorities of UNEP on its establishment in December 1972.

Decision 1(I), paragraph 30, of the Governing Council of UNEP at its first session authorized "the Executive Director to initiate the pilot phase of the International Referral System". Decision 8(II) of the Governing Council at its second session authorized "the Executive Director to develop, on the basis of continuing consultation with Governments, the International Referral System for sources of environmental information and to provide the necessary resources and staff at the United Nations Environment Programme headquarters for this purpose". It agreed "that in the development of the system particular attention should be paid to the organization of services in ways which are well adapted to the needs of developing countries, and to the need to relate the system to the over-all requirements, information handling structures and public information techniques of the United Nations Environment Programme as a whole". It further instructed "the Executive Director to take preparatory action in consultation with Governments to establish a network of national and regional focal points set up by Governments wishing to participate in the system" and authorized him "to provide assistance as appropriate to facilitate the participation of developing countries".

Decision 29 (III), paragraph 9(I) of the Governing Council at its third session requested the Executive Director to "accelerate the development of the International Referral System... by promoting the establishment of International Referral System focal points, particularly in developing countries". At the fourth session of the Governing Council, Governments were urged to accelerate their activities in relation to the International Referral System, and in particular to submit sources of environmental information to UNEP as soon as possible.

At its sixth session, Decision 6/3 recognized "that the System is now fully operational and capable of rendering valuable service in the area of exchange of environmental information", noted with satisfaction "the endeavours and the progress made in the development of the International Referral System for sources of environmental information", endorsed "the existing concept of the System as a co-operative and decentralized network with the United Nations Environment Programme playing a co-ordinating role" and the "catalytic role played by the System in the development of national information systems in general, and environmental information systems in particular, especially developing countries" and reiterated "its invitation to all Governments, United Nations organizations, other intergovernmental bodies and non-governmental organizations to undertake activities aimed at further developing and strengthening their capabilities for participating fully in the development, operation and evaluation of the International Referral System network". It requested "the Executive Director to provide, on the basis of close consultation with Governments and other partners in the System, adequate technical assistance and training within the resources available to the Executive Director in order to ensure full participation of developing countries in the System". It requested "the Executive Director to undertake studies of the information needs of users in each region, and to involve the regional offices of the Programme fully in this effort", and "to investigate means of strengthening the capabilities of the System to facilitate the delivery of information specially relevant to the needs of developing countries".

Governments and all focal points of the system were urged "to promote awareness of the role and importance of information in environmental decision-making, and in particular of the services provided by the System, with a view to promoting its use". The importance of strengthening those features of the System most relevant to its role in the development process, and to improving linkages with development-oriented information systems and services such as those dealing with technical co-operation among developing countries and science and technology was stressed.

Decision 7/4 of the Governing Council at its seventh session, after various considerations, invited "Governments of States members of the International Referral System: (a) To strengthen their support for their national focal points; (b) To intensify their efforts to promote the use of the System through co-ordination at the national level". The Executive Director was urged "within the resources available to the Environment Fund: (a) To continue the programme of periodic regional and international meetings of national focal points; (b) To strengthen the programme of national seminars designed to make decision-making bodies and planners aware

of environmental problems, with the co-operation of United Nations Environment Programme/International Referral System experts or consultants, with a view to increasing the use the System; (c) To provide national focal points, at their request, with effective assistance to enable them to fulful their role effectively".

The above recommendation of the United Nations Conference on the Human Environment and decisions of the UNEP Governing Council effectively constitute the Infoterra mandate.

The expressed or implicit goals of Infoterra as a whole may therefore be summarized as the provision of an international referral service for sources of environmental information, the encouragement and awareness of the role and importance of information in environmental decision-making, the stimulation of development of national systems for processing environmental information, and the promotion of an awareness of environmental problems. From the point of view of the Infoterra Programme Activity Centre, the fundamental aspects of Infoterra have been seen as referral, decentralization and the provision of information to decision-makers.

The following extract from the Infoterra Bulletin (vol.2, No. 2-3, March-June 1980) adds to the historical picture. "The influence of developed countries on the basic design of Infoterra was, from the beginning, considerable. The idea of a decentralized network based on referral reflected their understanding of an international network's possibilities and resource constraints. Throughout the design phase, developing countries on the other hand had reservations about referral, claiming it was too slow a mechanism to satisfy adequately the information needs of decision-makers and that decentralization, with greater resource requirements at the national level, might make it difficult for some countries to participate effectively.

The final compromise stressed referral and decentralization as basic approaches, but allowed for a simple and flexible system making maximum use of existing information resources and designed to operate in all countries irrespective of the level of information-handling technology.

In 1977, following five years of preparation, design and implementation, Infoterra became operational with the active participation of a dozen countries, most of them developed. Today, however the primary impetus for the further development of Infoterra comes from the developing world."

Infoterra today

At present Infoterra consists of the Programme Activity Centre at UNEP Headquarters in Nairobi (with a budgeted staff complement of eight professional plus six administrative support personnel, and two professional staff plus one secretary in the Computer Unit in Geneva) and national focal points in 110 countries. There are, in addition, one "point of contact" (a possible future focal point), three organizational participants (the International Institute for Applied Systems Analysis, the International Union for the Conservation of Nature and Natural Resources, and the Commonwealth Secretariat), two sectoral focal points (the Industry and Environment Office of UNEP and the Marine Environmental Data Information System of IOC) and one regional focal point (the International Centre for Scientific and Technical Information). A total of 8,466 sources were registered in January 1981.

A national focal point is designated by the government of a member state following approaches from UNEP; it is generally established in a governmental agency, usually with an environmental responsibility. Its principle tasks at present are to compile and maintain a list of sources of environmental information in its national territory, for inclusion in the Infoterra Directory, and to provide enquirers on request with a list of sources, derived from the international Directory, which are likely to have information relevant to their enquiry. It has other responsibilities, including promotion of Infoterra in its country, and the submission of regular statistical returns of activities to the Programme Activity Centre, but registration of sources and handling enquiries for referral lists are the key activities.

A source is defined as a functional unit which has information or knowledge on a particular environmental topic or range of topics, and is able and willing to provide appropriate information when requested to do so through the Infoterra system. The information about a source which should be collected by a focal point, and which is entered into the Infoterra Directory, includes its name and addresses, a brief free-text description of its general field of activity and information capability, what sort of organization it is, what is the organizational purpose of its parent body, the specific function of the information source, any constraints on the availability of its information, the forms and types of information which it can provide, a list of subject attributes (drawn from the list of attributes) which best describe the subject scope of the source, its geographical coverage and working language.

Full details can be found in Appendix F, which gives a specimen input form for the registration of a source. The input details can be completed by the source in co-operation with the focal point, or by the focal point. The source information input to the Directory should be rechecked and confirmed or altered by the focal point every two years. Possession of information on an environmental topic, ability to communicate it and willingness to do so are the sole mandatory criteria for source status. Sources are selected on the basis of these criteria by national focal points.

Completed source registration forms are passed to the Programme Activity Centre for checking and any necessary editing, and then to the computer centre in Geneva for inclusion in the international source file which is used to produce the Infoterra Directory. The Directory lists all registered sources with the details mentioned above, by country, together with an index arranged by attribute code which is produced by re-ordering and sorting the attributes assigned to each source, so that for any single attribute, all sources to which that attribute has been assigned may quickly be located. The Directory is produced annually, with an intermediate update volume, and is issued free of charge to focal points, in printed or magnetic tape form. Printing of the Directory from the magnetic tape is carried out by a contractor. A print of each source entry is sent to the appropriate national focal point for verification of the entry before the printed Directory is produced.

Focal points are free to define their community of users for themselves but, in principle, use of Infoterra is open to all. (Similarly, focal points are free to set their own criteria for source inclusion, some preferring to register all potential sources while others register only those which they consider to be of the highest quality). When an enquiry is received, the focal point can either handle the enquiry itself, or refer it to the Programme Activity Centre. In the former case, it expresses the enquiry as a search statement in terms of one or more descriptors from the list of attributes, and searches its copy of the Directory with those descriptors. It can carry out the search manually, or by searching the magnetic tape on its own computer. In either case, Boolean search statements may be used, although they are more difficult to use manually than in machine mode. If it refers the enquiry to the Programme Activity Centre, this may be done by mail, telephone or telex, either to Nairobi or Geneva, mail being the most common means of communication. Telex search statements may be sent directly to the Geneva computer.

Searches are carried out by the Programme Activity Centre, usually using the computer file, in which case source listings produced in answer can be ordered by a weighting mechanism in order of relevance to the enquiry.

Search results are returned to the appropriate focal points, for possible editing, and the user receives a list of the sources with which it is suggested he may communicate about his information need, together with, in most cases, a copy of the complete Directory record of each recommended source. It is then up to the user to communicate with such of the sources as he wishes. Users are requested to inform their Focal Points of the success or otherwise of such referrals.

In addition to organizing the production of the Directory and the response to search requests, the Programme Activity Centre is occupied in recruiting countries to Infoterra membership, in organizing training courses in focal point operation for new partners, and in visiting focal points for liaison, training and encouragement purposes. It also organizes global and regional meetings of Infoterra focal points, and produces publicity and promotional materials. Some focal points have been designated as model focal points (in Colombia, Egypt, India and Senegal), and regional training courses are organized at them. In addition, the bimonthly Infoterra Bulletin is produced and distributed to the focal points.

The Directory and other Infoterra publicatons are available in four languages: English, French, Spanish and Russian.

The above description is greatly simplified. For more precise details of Infoterra operational procedures reference should be made to the Operations Manual, Second Edition (1977).

It should be noted that the system, which for some years was known as the International Referral System for Sources of Environmental Information, was renamed Infoterra in January 1979.

The present evaluation of Infoterra

An in-depth review of Infoterra is to be carried out by the Governing Council of UNEP in 1981 and it was decided that, as a contribution to this review, the Infoterra system should be independently evaluated, with the assistance of UNESCO.

An independent study team was appointed to carry out the evaluation, composed as follows:

Mr. John Martyn, Evaluation Team Leader
  ASLIB Research & Consultancy Division, London. (United Kindgdom)
Mr. Adam Wysocki,
  Deputy Director General, Central Office of Scientific and
    Technical Information.(Poland)
Prof. S.I.A. Kotei,
  Professor of Library and Information Studies,
  University of Botswana and Swaziland. (Ghana)

Mr. V.A. Klimashevsky, Head of Section,
  International Centre for Scientific and Technical Information.
  (Union of Soviet Socialist Republics)
Mr. J.E. Diaz Bordenave, Communication Consultant. (Paraguay)
Mr. Amrane Ben Younes, Director, Centre National de
  Documentation Economique et Sociale. (Algeria)
Mr. G.Y. Vovchenko, Information Expert,
  Council for Mutual Economic Assistance Secretariat.
  (Union of Soviet Socialist Republics)

UNESCO, recognizing the general interest of such an evaluation
exercise, agreed to provide technical and financial assistance for
the funding of the consultancy for the Evaluation Team Leader and
possible assistance. In the event, assistance was provided by:

Prof. F.W. Lancaster,
Graduate School of Library Science,
University of Illinois. (United States of America)

Prof. Lancaster participated in the original design of the
questionnaires used in the evaluation, and conducted interviews in
the United States of Americaand Canada.

In accordance with the recommendations of the global Infoterra
II meeting in Moscow, in November 1979, an Advisory Group was also
constituted, composed as follows:-

Prof. M. Kassas, Environmental Expert. (Egypt)
M. Raymond Aubrac, Information Expert. (France)
Mr. W. Pearson, Infoterra national focal point. (United Kingdom)
Ms.M de Botero, Infoterra national focal point. (Colombia)
Mr. A. Lahiri, Infoterra national focal point. (India)
Ms. C. Alexander, Infoterra national focal point.
                (United States of America)
Ms. A. Bystram, Infoterra national focal point. (Canada)
Ms. S. Drouilh, UNEP Evaluation Unit
                - later replaced by Mr. A. Brough
Mr. A. Khosla, Infoterra Director
Mr. F.M. Teleb, Infoterra national focal point. (Egypt)
                - later replaced by Ms. E. Megid

The Advisory Group discussed and commented on the methodology
and instruments used in the evaluation, and gave valuable advice to
the Evaluation Team, but had no responsibility for, or control over,
the conduct of the evaluation or the preparation of the final
report.

A preliminary visit to the Programme Activity Centre, Nairobi, by the Evaluation Team Leader took place in January 1980, for familiarization with Infoterra and to discuss the form and scope of the evaluation, including the terms of reference of the various participants. Preliminary questionnaire design took place during February, and the Evaluation Team met in Nairobi in March 1980, for two days, to plan details of the methodological approach. This meeting was followed by a joint meeting of the Evaluation Team and the Advisory Group, during which the methodology was further refined and finally agreed.

In the course of the evaluation, questionnaires were sent to all focal points (Appendix A), to a random sample of registered sources (Appendix C) and a random sample of users (Appendix B). Questionnaires were also sent to sources or focal points in Unted Nations agencies (Appendix D), but responses to this last were disappointing. Interviews were also carried out with national focal points and some users, sources and other interested parties in a number of countries. Focal points interviewed are listed below:

Algeria, Bangledesh, Brazil, Bulgaria, Canada, Chile, China, Colombia, Congo, Costa Rica, Czechoslovakia, Denmark, Egypt, Ethiopia, France, German Democratic Republic, Ghana, Greece, Hungary, Iraq, Ireland, Jamaica, Kenya, Peru, Philippines, Poland, Senegal, Sudan, Sweden, Thailand, Tunisia, Union of Soviet Socialist Republics, United Kingdom, United Republic of Cameroon, United States of America, Venezuela, Zaire.

In addition, the Evaluation Team Leader attended a Western European regional meeting in Dublin, Ireland, in May 1980, which was attended by representatives of Denmark, Greece, Ireland, Netherlands, Sweden, the United Kingdom and the European Economic Community; he also took part in an Asian and Pacific regional meeting in Dalien, China, during August 1980, which was attended by representatives of Australia, Bangladesh, China, India, Indonesia, Japan, Malaysia, Nepal, Philippines, Thailand and Hong Kong. Opportunities for interview and discussion were taken at both meetings. Visits were paid to the computer centre in Geneva, and some telephone interviews were conducted with United Nations staff in Geneva. Visits were also paid to UNESCO.

Statistical and other materials were obtained from the Programme Activity Centre in Nairobi and from the Computer Unit in Geneva; access to the relevant materials and staff was freely given.

Members of the Evaluation Team (regional consultants) sent their reports and copies of collected interview schedules to the Evaluation Team Leader, to whom the postal questionnaires were also returned. A draft report was then written and revised in discussion with the Evaluation Team. The report as agreed by the Evaluation Team was then discussed by the Advisory Group at a meeting in Geneva in November 1980. Following this meeting, the final report, presented in this document, was prepared by the Evaluation Team Leader and submitted to the Executive Director of UNEP for such action and distribution as he might require. While the final report reflects the consensus view of the Evaluation Team, the Evaluation Team Leader accepts sole responsibility for the findings, views and recommendations expressed herein.

PART 2. RESPONSES TO QUESTIONNAIRES

Responses to the national focal point questionnaire

Copies of the questionnaire given in Appendix A were sent to national focal points of the Infoterra network, in English, French, Spanish or Russian, as appropriate. The questionnaire was also used by regional consultants in conducting interviews with selected focal points. The questionnaire was developed by the Evaluation Team Leader in co-operation with Prof. F. W. Lancaster of the University of Illinois, and was subsequently expanded following discussions in Nairobi with the regional consultants and the evaluation Advisory Group. Considering the length of the questionnaire (74 numbered questions, many of which were subdivided) it is remarkable, and may be taken as an indication of the degree of involvement felt with the Infoterra network, that 61 questionnaires were available for incorporation in this analysis. Questionnaires analysed here were received either by post from the national focal points concerned, from regional consultants following their interviews, or directly obtained by the Evaluation Team Leader. A few questionnaires were received after completion of the analysis, and although views expressed therein were taken into account in the discussion, their data are not incorporated in the tables.

Countries whose responses are included in the analysis are as follows, grouped roughly into geographical areas for convenience. The abbreviations in parentheses following each regional area name are those used in tables throughout this section of the report.

Table 1. Countries whose national focal point information was included in the analysis

Western Europe (W.EUR)

France	Malta	Spain
Greece	Netherlands	Sweden
Ireland	Norway	Switzerland
Israel	Portugal	United Kingdom

Eastern Europe (E.EUR)

Bulgaria	Czechoslovakia
Hungary	German Democratic Republic
Poland	Union of Soviet Socialist Republics

Africa (AFRICA)

Congo	Kenya	South Africa
Egypt	Mauritius	Sudan
Ethiopia	Morocco	Uganda
Gabon	Rwanda	United Republic of Cameroon
Guinea-Bissau	Senegal	United Republic of Tanzania
Ivory Coast	Somalia	Zaire

Asia & Pacific (AS/PAC)

Australia	Iraq	Pakistan
Bangladesh	Japan	Philippines
China	Jordan	Sri Lanka
India	Lebanon	Thailand
Indonesia	Malaysia	Viet Nam

North America (N.AM)

Canada	United States of America

Central & South America (C/S.AM)

Argentina	Costa Rica	Mexico
Barbados	Guatemala	Uruguay
Brazil	Guyana	

Not all the questionnaires were complete; in some cases, focal points were unable to answer all the questions, and in a few other cases, an odd page was missing from the questionnaire. Nevertheless, adequate information was collected to allow for a meaningful analysis. As with the user and source questionnaires, the results are be summarized here with such comment as appears necessary, but a fuller discussion of the findings is reserved for later in the report. The divisions of the summary are those of the questionnaire itself.

Organizational matters

In virtually all cases, the parent organization within which a national focal point is situated is a government ministry or department of state; exceptions include Egypt, where the parent organization is the Academy of Scientific Research and Technology (whose President of Council has ministerial rank and is appointed by decree), and China where the parent organization is the Institute of Environmental Chemistry. These exceptions are effectively government bodies, so that in general it is true that the responsibility for Infoterra activities is ultimately retained at a high government level. The majority of parent bodies are ministries or departments of the environment or an equivalent such as a department of the interior with environmental responsibilies or a ministry of local development with responsibility for town and regional planning. There are a few exceptions, such as a national council for scientific and technical research which houses its Infoterra activity within a national documentation centre, or the national planning division of a ministry of finance and planning. Forty-eight national focal points considered their administrative location such as to optimize the probability of environmental questions reaching them: 6 felt that they were not best located. Of these 6, two are currently revising their location.

Within the parent organization, most national focal points are
sited in an office or department which has an environmental
assignment of some kind and which often, but by no means invariably,
has a responsibility for collecting and distributing information.
In some cases, the information responsibility consists of
disseminating information to the general public about the activities
of its parent body, basically a public relations information role,
but in at least 26 cases the national focal point is sited in a
branch or office which has a full information role, carrying out
information searches, storing and collecting information, and
providing the services of a full-scale information department. In a
few cases, the national focal points are situated directly within an
information and documentation centre, sometimes covering the whole
range of science and technology, sometimes the broad area of the
environment. Forty-seven national focal points claimed to be
involved in information services other than specific Infoterra
activity but, as indicated above, this additional activity was
sometimes of a public relations nature. Twelve national focal points
said that they had no other information role. Of the 47, 45 had an
information role before becoming involved in Infoterra. Only 10
national focal points, of those responding to the questionnaire,
existed for Infoterra purposes only.

There is characteristically a time-lag between a country
joining Infoterra and actually beginning operations, generally of
the order of a month or so, but in a few cases measurable in years.
Sixteen national focal points stated that their administrative
location had changed since joining Infoterra. This may possibly
reflect developing attitudes towards environmental policy, and
consequent government reorganization, which would also explain
delays between joining Infoterra and actually taking a positive
part.

Eight respondents had a separate budget allocation for
Infoterra puposes, which was sometimes designated for communication
costs or computer use. In most cases the cost of being involved in
Infoterra was absorbed within a broader budget. The real question
here is, of course, not whether Infoterra costs are separately
accounted for, but whether adequate resources are made available for
operational purposes. This question was not asked directly, because
experience indicates that few administrators ever feel that their
budgets are adequate. In practice, the system is largely operating
on the goodwill and ingenuity of persons who are able to juggle
inadequate resources in order to fulful their international
commitments.

Facilities

Forty-five national focal points (76%) reported having immediate access to a library of environmental documents (as against 14 who did not). In a few cases, this meant access to the documentation of their own host organization, but in the majority of cases it meant access to a genuine library on environmental subjects, although probably a small collection. Slightly more, 49 (83%), had access to environmental specialists to whom they could turn for advice. This very much reflects their location in government departments concerned with environmental policy and control.

The availability of office facilities is shown, regionally and aggregated, below.

Table 2 Availability of facilities
(Numbers and percentages of national focal points reporting)

	W.EUR	E.EUR	AFRICA	AS/PAC	N.AM	C/S.AM	TOTAL
Telephones	12 100%	6 100%	16 94%	14 100%	2 100%	8 100%	59 98%
Telex	11 92%	6 100%	7 41%	7 47%	2 100%	2 25%	35 59%
Photocopier	12 100%	4 67%	10 59%	13 87%	2 100%	7 88%	48 80%
Microfiche reader	6 50%	4 67%	5 29%	7 47%	2 100%	3 38%	27 45%
Microfiche reader-printer	4 33%	3 50%	5 29%	5 33%	2 100%	2 25%	21 35%
Computer access	3 25%	4 67%	3 18%	6 40%	2 100%	2 25%	20 33%
On-line terminals	4 33%	0 0%	1 6%	3 20%	2 100%	2 25%	12 20%

It can be seen that North America is the best provided with facilities, followed in descending order by Eastern and Western Europe, Asia and the Pacific (largely because of the presence of Australia and Japan in this grouping), Latin America and Africa. The relative scarcity of telex equipment outside Europe and North America is worth noting because of the emphasis placed by Infoterra on telex access to Geneva. The scarcity of computer facilities and on-line access to databases is also worth noting, since this implies continued dependence on manual searching of the Directory in answering enquiries, unless some additional facilities can be provided at a regional level.

Personnel and training

    Fifty-six national focal points gave information about their
staffing. Twenty claimed at least one full-time staff member
engaged on Infoterra activities; in the separate staff categories, 9
full-time information or library specialists were reported, 16
scientists or technologists and 11 clerical or administrative
personnel. This means, of course, that 36 of the national focal
points reporting were staffed by part-time workers; 38 in all had
full or part-time staffing by an information specialist or
librarian.

    In order to give some idea of average staffing commitments, the
total claimed staff involvement has been summed and divided by the
number of national focal points reporting their staffing levels,
region by region, in table 3 below.

    Where no estimate or part-time involvement was given, merely a
note of the number of personnel employed part-time on Infoterra
activities, the (generous) assumption was made that this represented
a 50% involvement.

Table 3 Average staffing commitments.
       (Numbers of staff reported divided by
       number of national focal points responding)

	Information/ library specialist	Scientific/ technology	Clerical/ administrative	Total
1. W. EUR	0.14	0.13	0.18	0.45
2. E. EUR	0.45	0.57	0.19	1.21
3. Africa	0.58	0.60	0.66	1.84
4. AS/PAC	0.76	0.74	0.68	2.18
5. N. AM	0.48	0.05	0.55	1.08
6. C/S AM	O.63	0.31	0.33	1.27
TOTAL	0.54	0.49	0.47	1.49

    If these figures are accurate, the implication is that the
national focal points reporting staff levels are collectively
investing rather more than 80 man-years of effort annually in
Infoterrra operations at present levels. There is some reason to
suppose that the figures shown are an over-estimate, because of the
possibility of interpreting "national focal point activites" as
meaning all national focal point activities and not those solely
concerned with Infoterra, and because there is a common human
tendency to overclaim when reporting work done; however, it is clear
that the partner countries of Infoterra do collectively invest a
considerable sum in their involvement with the system.

Unfortunately, lack of reliable information about prevailing salary levels worldwide precludes any attempt at estimating the cash cost of involvement but, given staff costs, overheads and direct costs the total sum involved very probably exceeds the annual cost of the Programme Activity Centre, although it is unlikely to be as much as twice that sum.

It is noteworthy that Western Europe expends substantially less than half as much as any other region. This may be because some of the necessary effort is already carried out in the process of compiling national or regional (European Economic Community) directories and is not therefore restricted to Infoterra involvement. It is also likely that the longer tradition of information work in this region means that the assumption of an additional responsibility requires less effort than in some other areas of the world. There is also an implication that because the countries of this region are already richly endowed with information sources and facilities of all kinds, they are likely to derive less benefit from Infoterra than some other regions, and that consequently there is a disinclination at a political level to commit significant resources to involvement.

Thirty-four national focal points in the sample responding had staff who had attended Infoterra training courses, although it should be pointed out that in some cases it was the focal point manager who was trained and not necessarily the staff who actually carry out the duties associated with Infoterra. Not many suggestions were made for improving the training facilities. Five national focal points felt that training should involve some more practical work, possibly at model or known-to-be-good national focal points. Four also supported regular regional seminars, every two or three years, and there was one suggestion for national courses. Two national focal points felt that some training should be given in how to promote Infoterra. Other suggestions made once each, were for more training in general information science, less emphasis on general information science (this came from a qualified information scientist), some training in computer processing, more training fellowships, updating information on search techniques (either by short courses or Bulletin notes), help in learning English, and simplification of the Operations Manual.

Only 14 national focal points reported no visits to other national focal points and, in general, contact between staff of focal points appears to be reasonably well-developed, undoubtedly assisted by regional and global meetings.

Promotion of Infoterra

Fifty-seven of the responding national focal points had carried
out some form of promotion of Infoterra at some time, and only two
stated that no promotion had been carried out (although one of these
two also claimed to have done some promotion, so presumably the
no-promotion space was marked in error). There are no striking
regional differences, so the distribution of responses is shown in
aggregate in table 4 below.

Table 4   Methods of promotion of Infoterra
          (Numbers of responses by national focal points to each method).

	Once	Occasionally	Regularly	Total
Press releases	10	17	2	29
Items in professional journals	12	17	4	33
Direct mailing of material	4	31	11	46
Presentation at meetings	2	27	9	38
Involvement in user education	3	16	3	22
Other methods	4	11	4	19

The other methods of promotion mentioned by national focal
points included personal contacts (6 mentions), briefing new sources
(3 mentions), radio or television presentations (4 mentions, 3 of
which were from Africa), production of specialized directories for
seminars and meetings (2 mentions) and one mention each for
newsletter entries and for mounting an exhibition.

Most promotion has been targeted at those concerned with the
environment, in government or academic circles. Very little
international promotion has been pursued by the national focal
points, except at regional environmental or information meetings.
It is significant that very little of the targeted promotion has
been aimed specifically at those concerned with information; this is
a deficiency which should be remedied because these are the people
who provide environmentalists with their information, in most
societies.

In order of numbers of mentions, the most effective means of
promotion were found to be personal contact (10 mentions), direct
mailing of brochures (10 mentions), presentations at meetings (8
mentions) including audio-visual and slide presentations, notices
and articles in professional publications (7 mentions), seminars for
users (3 mentions), radio broadcasts or press notices (3 mentions),
and, once each, sending out user questionnaires, visits and on-line
demonstration of a search of Infoterra tapes.

The question concerning the means by which users were most likely to have heard of Infoterra services did not produce a very meaningful result; the most common response was, "through our publicity", although several national focal points indicated that other users, and libraries, were good stimulators of new requests.

Sources

The methods of identifying potential sources for inclusion in the Directory were very varied, but may be summarized as in table 5 below.

Table 5. How Sources are identified
(Numbers of national focal points mentioning each method)

Through mailing lists, published directories & yearbooks	16
From personal knowledge	18
From publications, including annual reports of institutions	15
From government departments	9
In a small country it is easy to know everyone relevant	3
From research registers	2
By sending questionnaires to organizations	2
By asking sources to suggest other sources	1

(Two national focal points said that they identified sources by searching the Infoterra Directory, which seems to be approaching the question from the wrong end.)

Amongst the criteria for inclusion, willingness (24 mentions) and quality (28 mentions) were the most frequently occurring (mentioned together 17 times). Consideration of a source's environmental objectives, that is, relation of its activities to the scope of the Directory, was given 19 times. Foreign language capability was mentioned 3 times, and experience of international co-operation once.

Thirty-three national focal points had not yet established a mechanism for regularly updating their information about sources; of the 21 who reported that they had such a mechanism, very few said what it was. Those that did give information generally indicated that they updated by recontacting the sources. Twenty-seven made no attempt to evaluate the performance of their national sources, in contrast with 27 who did. The usual means of attempting this evaluation however, was by asking users to recontact the national focal point to indicate their satisfaction or otherwise; in practice this seldom happened.

An exception, found in the majority of the Eastern
European countries and in some others, was when the national focal
point took the responsibility of contacting sources on behalf of the
user, in which case a very accurate quality assessment could be
made. If national sources were found to be functioning
inadequately, they were dropped from the national source list, and
if a foreign source was thought inadequate (although in both cases
this was said to be a low-frequency occurence), the Programme
Activity Centre in Nairobi was or would usually be informed.

A substantial number of national focal points made suggestions
for ways of encouraging more active participation by sources. These
suggestions are seldom sufficiently clear-cut to be readily
classifiable, but may be considered as falling into three
overlapping classes; exhortation, provision of information about
Infoterra, and offer of service. "Exhortation" in this context
includes explaining the advantages of Infoterra partnership and the
importance of Infoterra activities, both internationally and with
special regard to developing countries, the distribution of
certificates of registration or the award of certificates to "best"
sources, the inclusion of an organization in a national or
international directory with some consequent publicity advantages,
and personal or postal contact of various kinds. Twenty-two
responses fell into this category. Giving information about
Infoterra implied regular information giving by use of a sources
newsletter from the national focal point, regular meetings of
sources and the national focal point and the distribution of old
Infoterra directories and other publications. Nine responses were
included in this group. Offers of service, for which there were 12
recommendations, include giving new sources lists of similar sources
in their own country and internationally, provision of priority
information on environmental problems, free supply of Infoterra
materials on fiche, offers of free training, encouragement to become
users, financial incentives and offers of information service other
than simple referral information to which they are entitled whether
they are sources or not.

These three groups of suggestions, in fact, equate roughly to
the steps which have to be followed in order to build up a
co-operative network such as Infoterra. In the first instance the
object is to encourage membership of a family or "club". The second
step is to promote the sense of belonging or corporate identity by
continual reminders of membership, such as the distribution of a
newsletter and the holding of meetings. The third then is to
demonstrate some positive advantages by a distribution of benefits
which are not readily available to the non-family community. The
process is fairly well understood and is found in a great many
social organizations ranging from children's clubs to political and
religious organizations.

Actual services which are or could be supplied to sources were mentioned by 40 national focal points. They include regular or on-demand provision of information services additional to referral (11 mentions), regular or occasional supply of information about Infoterra (9 mentions), production and distribution of a manual for sources (1 mention), production and distribution to sources of a national directory (5 mentions), annual national training seminars (1 mention), integration of Infoterra in the national system or representation of national interests at the international level (2 mentions), the maintenance of personal contacts, including the solicitation of queries (9 mentions) and the distribution of information about sources to potential users (1 mention). Thirty-four national focal points reported that they collected information about sources other than that required for Infoterra input. Not all of these indicated the type or purpose of this information, but from those that did answer it is clear that the major purpose is associated with a national activity involved in the maintenance of awareness about environmental organizations, often of a specific kind such as the compilation of a register of research in progress. Copies of published reports issued by sources were sometimes collected, with varying success. Thirty-eight national focal points also maintained records of potential sources other than those which they registered with Infoterra, these frequently being of national interest but not yet suitable for international notification. Twenty-three national focal points produced a national directory of sources of environmental information, and 33 reported that they did not, but of this latter group several indicated that they planned to do so in the near future.

Requests and request handling

The number of questions appropriate to Infoterra received by a national focal point since it began its operations is not very meaningful. In several cases, the numbers varies somewhat, either upwards or downwards, from the figure notified to the Programme Activity Centre. There is clearly some uncertainty as to what can be classed as a "request appropriate to Infoterra", a point which is discussed elsewhere. Further, the figures are not useful for comparisons between national focal points because of the different dates of inception of Infoterra activities. Comparison between regions may be slightly more meaningful on the assumption that some of the implicit errors cancel themselves out on aggregation. On a very crude basis, then, the average Eastern European national focal point has handled 94 queries, the average Asian 67, Western European 50, African 23 and Latin American 6.

A little more can be learned by comparing success rates, that is, by taking the number of questions asked and comparing this with the number which were satisfactorily answered with lists of sources. On that basis, Westerm Europe successfully answered 73%, the Eastern European countries 76%, Africa 86%, Asia 94% and Latin America 84%.

The ways in which requests have been handled by national focal points is shown in table 6 below; information is presented for each region, and the numbers indicate the percentage of each region's queries which were handled in the way indicated.

Table 6. Methods of handling requests at national focal points
(Percentages of national focal points responding)

	W.EUR	E.EUR	AFRICA	AS/PAC	C/S.AM
Direct supply of information	36	29	30	9	13
Search in printed Directory	47	24	34	17	52
Local search by computer		15	3	20	
Referral to Nairobi or Geneva	13	28	26	53	22
Referred to other information service	4	3	6	1	13
Request for search refused		*	*	1	
(* indicates number below 0.5%)					

The United States of America and Canada are not shown in this table or in the preceding figures because appropriate figures were not available. Except in Western Europe, where around 5% of queries are received by telex, all but a very small number of queries are received in all regions by mail. This fact, when coupled with the heavy reliance in some regions on referral of queries to Nairobi or Geneva, explains in part the undesirable slowness of the mechanism, referred to below in consideration of the user response.

In order to highlight the relative use of the printed Directory and referral to Nairobi and Geneva, table 7 below shows the relative percentages of queries handled by some sort of referral, that were treated in these two ways. (The percentage have been recalculated from the preceding table, withdrawing those enquiries which were handled by direct supply of information.)

Table 7. Relative use of printed Directory and referral
to the Programme Activity Centre

	W.EUR.	E.EUR	AFRICA	AS/PAC	C/S.AM
Search in printed Directory	74	33	49	18	60
Referral to Nairobi or Geneva	20	40	38	58	25

(The figures for Latin America are based on only 40 cases, so should
be treated with caution).

The implication is clear that an unacceptably high number of
requests are being referred to the Programme Activity Centre in
Nairobi or to Geneva, particularly as such referral is viewed by the
Programme Activity Centre as being essentially a temporary facility.
In too many cases, national focal points apparently find difficulty
in using the Directory, either because they lack training or
experience in its use (which may be a particular case of
unfamiliarity with information tools generally), or because it is
too difficult a tool to use.

It is noted, and requires no analysis, that virtually all users
of Infoterra were believed to be aware that they were using
Infoterra when they asked a question.

Thirty-five national focal points were able to give some
information on the types of organizations from which they had
received enquiries during 1979, but the information was expressed as
actual numbers, estimates, proportions or mere indications of
occurrence, so that the only meaningful way of reporting this is to
give the numbers of countries which indicated each case.

Six national focal points reported questions coming from
libraries in their own countries, 14 from information centres, 25
from any other person or organization in their countries, 12 from
international organizations including United Nations agencies, 24
from Infoterra national focal points in other countries, and 30 from
any other person or organization in another country. This allows us
to say that the largest number of enquiries probably comes from
other countries, and that there is a substantial enquiry traffic
among national focal points. As to whether the trend of enquiries
from each type of organization was rising, falling or stable, few
countries felt able to say. Of those who did, trends were
invariably shown as rising or stable, but no reliance can be placed
on these statements.

Twenty-nine national focal points reported receiving enquiries
from government officials or agencies, 20 from commerce and
industry, 29 from academic institutions, 31 from other research
bodies, and 17 from private citizens, although it is noted that the
proportion of enquiries received from private citizens was always
very small. (A total of 36 national focal points responded to this
question.)

Of 39 national focal points responding, 26 reported enquiries for information for policy making and planning, 39 for information in support of scientific or technological activities, and 12 reported requests for other types of need (generally for education or general information purposes). In so far as any balance can be struck, there seems to be more demand for information for scientific or technical purposes than for policy making and planning. As some national focal points pointed out, it is difficult to carry on a scientific activity without information, but policy making is more influenced by political considerations than by information, and in many countries the part played by information in policy formulation is small.

Average time delays between a user putting an enquiry to his national focal point and receiving an answer vary depending on whether the question was handled locally or referred to the Programme Activity Centre.

Table 8. Average response times
(Days for receipt by user of referral list)

List produced by	W.EUR	E.EUR	AFRICA	AS/PAC	N.AM	C/S.AM	TOTAL
National focal point	18	12	8	11	11	8	12
Nairobi or Geneva	-	28	18	24	20	30	23

It is noted that users reported an average delay of 24 days, which accords reasonably well with the figures shown above, although there is a suggestion that the estimates by the national focal points perhaps err on the side of speediness, or that users slightly exaggerate their delays; the difference though, is not very great. Considering that most enquiries are handled by mail, the delays shown are reasonable, and attributable more to the defects of postal systems than to slow processing at national focal points. Nevertheless, some individual national focal points are unacceptably slow, and here it seems that the Western European national focal points in particular, with their long traditions of information handling and information service provision, are curiously at fault unless the economic situation is forcing everyone to use the local equivalent of second class mail.

In some cases, queries were received that national focal point could not satisfactorily answer by their own use of the Infoterra Directory. What happened in such cases is shown in table 9, which gives the frequency of response in each category of treatment. No significant differences were observed between regions, so the responses are aggregated.

Table 9.   Treatment of queries not able to be answered by national
           focal point Directory use
           (Numbers of national focal points giving each response)

	Always	Sometimes	Never
Answer given on basis of own experience or knowledge	7	23	3
Refer to another information centre in the same country	6	21	2
Refer back to user for clarification	5	20	4
Refer to UNEP/Infoterra	10	16	5
Refer to other national focal points	2	15	11
Reject the question	-	3	19

When appropriate, 3 national focal points (2 in Western and 1
in Eastern Europe) always answered queries partly through Infoterra
sources and partly from non-Infoterra sources, 16 did so frequently,
21 occasionally and 2 never did so. In addition to referring users
to Infoterra sources, 2 national focal points always gave further
information in the form of documents or references to documents, 16
frequently did so, 21 did so occasionally and 2 never did.
Forty-two national focal points answered a question about the ways
in which they provided documents to enquirers. Thirty-five stated
that they supplied copies of documents if they were available within
the national focal point, 27 obtained copies from elsewhere and 29
referred users elsewhere for documents which were not held at the
national focal point. It is encouraging to find that document
provision is apparently accepted as a part of the role of a national
focal point, as this is a first step in the provision of full
information service beyond referral.

As has been noted previously, a substantial number of enquiries
were referred to Geneva or Nairobi for provision of a referral list.
Thirty national focal points indicated the reasons for such
referral, in some cases giving more than one reason. Twenty-one
said that they referred to the Programme Activity Centre because a
search of the printed directory was too complex, and 15 said that
the list of attributes was inadequate to express the subject matter
requested. Both these reasons point to defects in the printed
Directory, and only the first could be materially affected by more
training in its use. Fourteen referred questions to PAC because
they had inadequate access to computer facilities at their national
focal point, and 5 referred to the Programme Activity Centre because
they were not sure if the question was really within the scope of
Infoterra.

So far as the computer services offered by Infoterra are concerned, 14 national focal points reported no experience of them, 23 were satisfied with them, and 3 were not satisfied. One reason for dissatisfaction was stated as, "Would prefer on-line mode in order to 'dialogue' with the register." A second noted that, "searching by attribute is inexact and expensive. The file is small enough to search manually or to omit using. Intellectual content is not good but the tapes and software are not bad." The third dissatisfaction was simply that the national focal point concerned had no access to telex facilities.

Seven national focal points said they used Infoterra magnetic tapes for computer searching, and 36 said that they did not. Of the 7, 6 were satisfied with the services and software supplied, and the seventh did not respond. A wish for more documentation of the software was, however, expressed by some national focal points. Each region, with the exception of Western Europe had at least one national focal point using tape.

Before attempting to answer an enquiry, 6 national focal points always talked or corresponded with the enquirer to clarify the information requirement, 9 frequently did so, 21 did so occasionally, and 5 never did. It is felt that all national focal points should be encouraged to discuss the enquiries with the users, in the interests of getting the enquiry exactly stated, because in normal information department practice experience indicates that the original statement of an information requirement by a user is seldom an accurate reflection of the real need, generally being insufficiently specific. Failure to get an accurate specification of a need for information results in dissatisfied users.

Fourteen national focal points did not follow up source referrals to determine whether or not the user found the referral successful, and 23 national focal points reported that they did follow up referrals. Few said how they did this, but the usual way was by asking the user to inform the national focal point (sometimes by sending it a copy of any letters received from sources) of the results of referrals. This is not a very effective method, and the only effective method of follow-up seems to be by arranging that the national focal point itself contacts sources on behalf of the users.

Three national focal points did not edit the list of sources they gave to a user: 19 did edit their lists, on the basis of personal experience or knowledge of the sources listed, or by examination of the full list of attributes of each source and comparison with the original enquiry. Again, editing of search results is something which is standard practice in information departments, in order to improve the precision of the answers and to remove the less relevant items retrieved; the longer the list of references given to the user of a computerized secondary service, the less likely he is to call for any of the original documents, and the same effect is probably true with lists of sources.

Users quite frequently returned to their national focal point for some assistance in connection with their enquiry, or to re-use the system. Frequencies of occurrence as reported by national focal points are shown in table 10 below.

Table 10. Frequency of return to focal point for further assistance
(Numbers of national focal points giving each response)

	Always	Frequently	Occasionally	Never
For help in gaining access to documents	4	7	14	10
To ask national focal point to contact selected sources	7	3	12	11
To ask supplementary related questions		4	24	3
To ask for assistance in paying for, translating or understanding materials received	1	1	4	24
To ask completely new questions		7	23	5

The fact that 5 national focal points never had repeat questions on different topics from users suggests at first sight that their users were so disenchanted by the first experience that they never came back; however, the figure more probably means that these national focal points have not yet experienced re-use by enquirers, which, given the relative infrequency of a major need for information by an individual user is quite credible. To some extent, the figures otherwise reflect the user's perceptions of the facilities he expects to be provided with by a national focal point, possibly influenced by the availability of facilities (for document acquisition and so on) in the user's normal working environment.

Thirty-nine national focal points kept records of the questions they were asked, and of the answers which were given, as against only 2 who did not. All national focal points should be encouraged to do this.

A number of national focal points gave the subject areas of their most frequent questions. Insufficiently specific definition makes the resultant list hard to classify, and there is undoubtedly some overlap in the subjects named. The list of subjects named, by regions, is shown in table 11.

Table 11. Most frequent environmental questions
(Numbers of national focal points mentioning each topic)

	W.EUR.	E.EUR	AFRICA	AS/PAC	N.AM	C/S.AM	TOTAL
Pollution	3	2	2	6	1	4	18
Wastes	4	3	1	2			10
Legislation	2		1	2	1	1	7
Water resources		1		2		2	5
Agriculture and food			2	2			4
Energy	2		1	1			4
Technology			2	4		2	8
Standardization		1				1	2
Marine environment			1			1	2
Human habitation			2			2	2
Environment protection		2					2
Education			1		1		2
Land use	1						1
Administration	1						1
Information services	1						1
Use of resources		1					1
Policy and planning		1					1
Statistical data		1					1
Economics			1				1
Wild life			1				1
Soils				1			1
Health and medicine				1			1

Thirty-six indicated that they had received at least one
Infoterra-related question in the last 3 months. Average numbers of
questions by region (excluding N.America) were: Western Europe 6,
Eastern Europe 23 Africa 3, Asia 18 and South America 1. These
figures are influenced by a number of factors, including the degree
of organization of the national focal points, and the integration of
Infoterra in national information systems, which tend to increase
the number of queries received, and the availability of other
information resources, which tends to decrease it.

The figures can be compared with the estimates national focal
points gave of the number of enquiries they would expect if
Infoterra capabilities were fully developed in their countries.
These averages were, Western Europe 25, Eastern Europe 75, Africa
17, Asia 50 and South America 42. It is obvious that most countries
have a long way to go; to reach these figures implies a trebling of
queries for Eastern European countries and Asia, a quadrupling for
Western Europe, a sixfold increase for Africa and a very much larger
increase for South America.

These figures, however, should not be used as performance indicators, because the date of start of Infoterra operations varies considerably, most of the Central and South American centres being relatively younger in the system than those in, for example, Western Europe.

The reasons given by national focal points for present low use of Infoterra in their countries are summarized below, by regions and aggregated.

Table 12. Reasons for low use of Infoterra
(Numbers of national focal points making each response)

	W. EUR	E. EUR	AFRICA	AS/PAC	N. AM	C/S.AM	TOTAL
Not enough promotion	6	1	7	7		4	25
Adequate information facilities elsewhere *	4	1			2		7
Lack of environmental conciousness	1		3	2		1	7
Lack of information conciousness	1		3			1	5
Too slow for substantive information *		1	1	1		1	4
Lack of adequate budget			2			2	4
Lack of adequate infrastructure development			3			1	4
Does not provide adequate information		2		1			3
Most users already have their own sources **	3						3
System doesn't provide documents *		1		1			2
System gives referrals, not information *		2					2
Small country, system not really necessary **	1						1

Comments marked * can probably be put together, as can those marked **, which would mean that 11 comments suggest that one reason for low use is that users really would prefer substantive information from the system, and that in 11 countries it is felt that existing available information services are adequate to meet most needs.

General problems

The response to a question about problems encountered in dealing with the Programme Activity Centre or other national focal points are shown below. There were no significant differences between regions, so answers have been aggregated.

Table 13. Problems in dealing with the Programme Activity Centre or other national focal points
(Numbers of national focal points answering)

	No	Yes
Communication problems (mail, telephone etc.)	37	14
Administrative problems	38	8
Language problems	3	9

Communication problems are relatively more frequently noted in Africa than elsewhere, but appear to be fairly general and are usually related to postal delays worldwide. It is noted that some countries have difficulty in paying for international telephone calls and, therefore, reliance on the postal system is largely obligatory. The language problems mentioned relate more to the difficulties of receiving information from sources in languages other than those of the enquirer; this, though, is a problem which would be encountered in using any information service which does not have a built-in translations loop. Under "other problems", financial difficulties were most frequently mentioned (by 4 national focal points); difficulties with getting examples of publicity material, the need for stronger guidelines for programme development, too much administrative work, lack of replies from some sources, and difficulties in interpreting Field 205 (Description of Information Source) were mentioned once each.

Table 14 below shows the degree of difficulty reported by national focal points in carrying out the tasks of a focal point, by regions and aggregated. It can be seen for Western Europe the major difficulty is securing financial support for the national focal point, which, taken with other information, suggests a lack of commitment to Infoterra at a sufficiently high level. African and Latin American countries also find difficulties in this area. Otherwise, internal promotion is, not very surprisingly, often a problem. The most trouble-free areas seem to be the identification of sources (although getting their co-operation is not so easy), and conforming to laid-down guidelines. To judge from the erratic rate of submission of bimonthly reports to the Programme Activity Centre, more difficulty is found in reporting than is admitted.

Table 14. Degree of difficulty encountered in carrying out national focal point activities
(Numbers of national focal points answering)

	W.EUR	E.EUR	AFRICA	AS/PAC	N.AM	S/C.AM	TOTAL
Identifying sources							
Great difficulty			2	2			4
Some difficulty	2	1	8	4	1	2	18
No difficulty	9	5	7	6	1	6	34
Getting source co-operation							
Great difficulty	1		3	3			7
Some difficulty	6	4	7	5		5	27
No difficulty	4	2	7	4	2	2	21
Answering user questions							
Great difficulty	1		3	1			5
Some difficulty	6	4	6	5	1	5	27
No difficulty	3	2	6	6	1	2	20
Promoting national use							
Great difficulty	2		4	3	1	4	14
Some difficulty	4	5	10	4	1		24
No difficulty	1	1	1	3		2	8
Securing financial support for the national focal point							
Great difficulty	5		8	2	1	4	20
Some difficulty	1	2	6	6		1	16
No difficulty	2	4	2	3	1	1	13
Conforming to Infoterra guidelines							
Great difficulty			1	1			2
Some difficulty	4	3	8	4		3	22
No difficulty	4	3	6	7	2	2	4

In comments on this question, two countries pointed to the difficulty of securing adequate or full support for the Infoterra programme when it was in competition for resources with other, national, programmes.

The uses to which the Directory is put in national focal points are shown in table 15 below, aggregated.

Table 15. <u>Uses to which the Infoterra Directory has been put</u>
(Numbers of national focal points answering)

Responding to internal referral requests	44
Responding to external referral requests	35
Supplementing source lists for environmental information	34
Cataloguing national information resources	23
As a basis for a national environmental information system	30
As an environmental management tool	23

Unfortunately, no amplification was given in the responses, so that details as to exactly how, for instance, the Directory has been used as an environmental management tool are lacking.

Some possible changes that might be made to the Directory of sources were presented to the national focal points for their assessment of the importance or otherwise of the changes (see table 16). Judgements were allowable on a scale running from "essential" through "desirable" and "not important" to "no opinion". By giving an "essential" judgement a weight of 2, and a "desirable" a weight of 1, the various options can be put in order of strength of feeling (assuming that "not important" and "no opinion" both have zero weight). This rank order is shown in the last column. Numbers of national focal points expressing each opinion are shown, together with percentages in each opinion category of those giving an opinion.

Table 16. <u>Opinions on possible changes to the Directory of sources</u>
(Numbers of national focal points responding to each choice)

	Essential	Desirable	Not important	No opinion	Rank
Improved coverage of sources	9 23%	26 65%	5 13%	10	5
More specific attributes	19 41%	25 54%	2 4%	5	1
Improved attribute structuring	17 39%	21 48%	6 14%	6	2
A different indexing method	1 4%	6 25%	17 71%	25	9
Co-ordinated attributes	14 33%	22 55%	6 14%	9	3
Extend environmental coverage	8 20%	26 63%	7 17%	12	7
Wider Directory distribution	9 18%	26 51%	16 31%	2	5
Inclusion of more information on collections of documents	13 29%	23 51%	9 20%	6	4
Inclusion of more information on bibliographic services	7 19%	21 57%	9 24%	11	8

It is clear from these responses that, as has already been noted, the greatest immediate need for change to the Directory is concerned with improvement of the list of attributes. The basic system itself, a list of keywords that can be co-ordinated, is considered to be satisfactory (which is fortunate, because it would be extremely difficult to think of an improvement to this method of indexing). However, the individual terms are thought to be insufficiently specific; there is no structure in the list, other than grouping the terms under a brief set of very broad headings, and the lay-out of the printed Directory makes co-ordination of several attributes rather difficult, particularly for the inexperienced. More discussion of this point is found in the section headed Conclusions and recommendations, below. Document location and delivery has already been indicated as a problem area, so it is not surprising to find that the next most desired change is the inclusion of more information about the locations of document collections.

Impact of Infoterra

National focal points were asked to give a brief statement of what, in their opinion, were the most important objectives of the Infoterra programme, both in their own countries and internationally. From the results given in the table below, the general view of the national role of Infoterra can be seen to be balanced between the goals of information transfer and the goals of stimulating awareness of environmental problems.

Table 17. National objectives of Infoterra
        (Numbers of mentions by national focal points)

	Mentions
Developing a national(environmental) information network	13
For the exchange of information	11
Provision of access to information sources abroad	10
Helping to increase environmental consciousness	9
Providing an additional information access facility	8
Helping to increase information consciousness	6
Improving environmental decision making	3
Improving co-ordination in the flow of infomation	3
Compiling a national inventory of environmentalactivities	2
Serves a general need for referral services	1
Gives an opportunity to participate in enviromental planning	1
Promotion of regional co-operation	1
Provision of information for environmental management	1
Creation of a database of environmental information	1
Has its greatest impact on information handlers	1

Table 18. International objectives of Infoterra
          (Number of mentions by national focal points)

	Mentions
Provision of access to information through international co-operation	13
The exchange of information and expertise	10
Provision of access to information for the developing world	10
Improving the environment by better information flow	8
The creation of a global environmental awareness	8
Catalysing the development of information systems	2
Promotion of environmental discussion between users	1
Providing relevant literature for requests	1
Contributing to UNEP objectives	1
Improving environmental decision making	1
Improving international relations	1
Systematization of referral mechanisms	1

As can be seen, several of the themes listed above relate to
each other and could be put together.

The majority of national focal points conceive the prime
international objective as being the provision of access to or the
exchange of information. This may reflect a contrast between the
perceived roles of national focal points (the national role) and of
Infoterra as a whole (the international role). No regional view was
observable.

Opinions of national focal points as to whether Infoterra
participation has led in their respective countries to a greater
appreciation of environmental factors or of the need for
environmental information are shown below, regionally and in total.

Table 19. Impact of Infoterra participation
           (Numbers of national focal points responding)

Potential user group		W.EUR	E.EUR	AFRICA	AS/PAC	N.AM	C/S.AM	TOTAL
Policy makers	YES	4	5	8	11	1	6	35
	NO	5	1	3	3	1	1	14
Industry	YES	1	4	2	7	–	–	14
	NO	8	1	7	5	2	3	26
Scientists	YES	5	6	9	12	–	6	38
	NO	4	–	2	1	2	–	9
Educators	YES	2	4	4	10	1	5	26
	NO	7	2	5	2	1	1	18
Information community	YES	4	6	7	11	1	4	33
	NO	6	–	2	2	1	2	13
The general public	YES	–	1	–	5	1	–	7
	NO	8	4	6	6	1	2	27

A cautionary note should be added that although effects may have been noted, in a number of cases they were slight. The figures reflect the general direction of promotion, which has been primarily among policy makers and the academic community, with industry and the general public, as is usual, the least aware.

Twenty-three national focal points reported that their establishment had led to other developments in their national provision of environmental information (and 30 said that no other development had resulted). Three said that the national focal point had become the principal source in their country for environmental information, and two said that their establishment had led to a reorganization of information activities. Other effects, mentioned once each were that contacts made in approaching sources had led to an increased awareness among them of the value of information, that it had indirectly stimulated the production of a multilingual inventory for the European Economic Community, that it had created stronger links between documentation and information centres, that it had played a catalytic role in developing referral services in the environmental field, that it had made otherwise non-available information accessible, that it had led to an increasing use of international experience, that it had created an interest in centralizing national resources in databanks, that it had led to publication of specialist directories and other materials, that a source book of national environmental activities had been published, that it had led to the planning of a distributed database for the national system, that a national environmental system was now being established, that it had encouraged development of information activity in a related government department, that it demonstrated the need for a complete inventory of information sources, and that it had led to a trend towards increasing use of environmental information. The strength of some of these effects is, as has been pointed out, hard to assess, but nevertheless the Infoterra programme has had a number of beneficial effects beyond the simple provision of referral services.

Forty-three national focal points stated that participation in Infoterra had improved their national awareness of and access to environmentally related information in other countries, as against 12 who reported no improvement. The few suggestions for improvements to the programme included better promotion, provision of on-line service, change to a documentary system like the International Information System for Agriculture Sciences and Technology or the International Nuclear Information System, regional meetings and workshops and more visits by specialized Programme Activity Centre staff members.

Since the inception of Infoterra participation, 35 national focal points reported an increased demand for environmental information within their countries (and 18 reported no increase); similarly, 35 reported increased demand from other countries for environmental information from their own country (and, again, 18 reported no increase).

Thirty-one national focal points said that the Infoterra programme had had some effect in improving co-operation among organizations concerned with environmental information in their country (18 reported no effect), and 32 noted some effect in improving co-operation between organizations in their own country and those of other countries (16 noting no effect). Of the explanations of the ways in which the effect had been noticed, 17 related to increased contacts and co-operation (often of an informal kind between the national focal points themselves, and between organizations and institutions in the field of environmental protection. Other effects were the acquisition of more archive material, improved contacts because of the need to contact other information services when answering questions, greater awareness between sources of each other's existence, more formal consultation on environmental matters, an increase in the number of bilateral agreements for scientific exchanges, and helping to establish and develop a national society for the improvement and protection of the environment. Regarding the development of contacts between the national focal points, the Evaluation Team Leader was present throughout two regional meetings of national focal points, a Western European national focal point meeting in Dublin, Ireland, and an Asian and Pacific national focal point meeting in Dalien, China, and the extent of informal relations and their value in discussing common and local problems was in both cases most apparent. Personal contacts between information workers is of great importance in facilitating the free flow of information, and it is clear that one of the benefits accruing from Infoterra involvement is the extent to which the programme allows the establishment of personal contacts between members of the environmental information communities.

A question on whether participation in Infoterra had had any effect in stimulating interest or activity in establishing other information services in the science/technology area in their countries was answered affirmatively by 14 national focal points (and negatively by 35). Very few explanations were given, the only two worth mentioning being a comment that participation in Infoterra had been followed by the creation of a national science and environmental library system and that some sources had been stimulated, following contact, into beginning to develop their own information systems.

Finally, in attempting to study the impact of Infoterra involvement, national focal points were asked so say whether they considered that the benefits of participation in Infoterra outweighed the costs of national involvement in the programme. To this, 40 national focal points answered that they did consider the benefits outweighed the costs, and 9 indicated that they felt involvement was not cost-beneficial to their country. There are some slight grounds for suspecting that at least two of the nine national focal points giving a negative view may have misunderstood the question, but lacking other evidence the answers can only be accepted at face value. It therefore appears that Infoterra benefits outweigh the national costs in the great majority of cases, but this favourable finding must be modified somewhat by a reminder that, in many cases, the costs are relatively very small, and that the finding of one significantly useful piece of information, in any field of endeavour, can frequently be of greater value than the entire cost of the system producing it, so that, although it has never been successfully demonstrated in the general case, most information systems of reasonable effectiveness are cost-beneficial. However, this still remains a satisfactory finding with respect to Infoterra.

Future activities

The following table gives the views of national focal points on a number of possible developments that might be promoted by the Infoterra network in the future. As with possible changes to the Directory, judgements were allowable on a scale running from "essential" through "desirable" and "not important" to "no opinion". Again, by giving "essential" judgements a weight (Wt.) of 2, and "desirable" a weight of 1, the various options can be ranked in order of strength of feeling, and in this case the weight as well as the rank order is shown in the table. Percentages shown are percentages of those who expressed an option on the particular issue, "no opinion" votes being excluded.

Table 20. Opinions on possible future developments of Infoterra

	Essential	Desirable	Not important	No opinion	Wt.	Rank
Set up a document delivery system	22 42%	24 46%	6 12%	3	68	2
Assist users to obtain needed documents	20 36%	33 59%	3 5%	-	73	1
Assist users to pay for information	5 13%	20 53%	13 34%	14	30	11
Assist users to obtain translations	6 13%	34 71%	8 17%	4	46	9
Market subsets of the Infoterra Directory	6 13%	35 74%	6 13%	7	47	7
Publish listings of training courses	18 34%	30 57%	5 9%	5	66	5
Create a bibliography on environment	23 48%	22 46%	3 6%	8	68	2
Create an international environmental database	19 40%	23 49%	5 11%	7	61	6
Provision of more training	20 38%	27 51%	6 11%	2	67	4
Optional on-line access to Infoterra	8 18%	31 69%	6 13%	7	47	7
Creation of information analysis centres	7 18%	23 59%	9 23%	10	37	10

Only the Eastern European countries' focal points made any
suggestions for other future developments. All 5 national focal
points considered it essential to change the system to a referral
and bibliographic information system. Two considered it essential
to orient the system towards major problems of environmental
protection, mainly technological problems: this related to the view
of 3 Eastern European national focal points that it was essential or
desirable to activate sectoral centres or establish regional focal
points for special environmental protection problems. There was one
"essential" recommendation for the establishment of a complete
Infoterra project documentation, including processing of computer
programs, and one "desirable" recommendation for the publication of
a set of valuable documents. (It is noted that the idea of
publishing a set of "key" documents on specific environmental
problems, although not referred to by other national focal points in
this questionnaire, is an idea which has been discussed and
recommended from time to time in regional national focal point
meetings, and if the idea were canvassed, it would possibly find
general support.)

Some comment on these options is necessary here, although more extended discussion is presented below. That assistance to users in obtaining needed documents is seen as the most essential development is not surprising. Most needs for information are met by delivery of a document or documents, and even in cases where advice is required on a specific problem, that advice often includes reference to some published or semi-published material. Very properly, the national focal points have given a lower priority to the establishment of a document collection and delivery system, which is only one among several ways of meeting the actual need, that of getting a necessary document into the hands of the user who requires it.

The possible development which has been ranked second, the creation of an international environmental database of bibliographic records, is also not very surprising, because no single base of high quality, covering the whole area of information of value to environmental studies, exists at present. It does not exist because of the practical difficulties implicit in its creation.

The costs of creation of a major bibliographic database are extremely high and continue to be high for a number of years before a base can be considered economically viable; usually, a database needs to be operational for seven or eight years before it can be called viable. There are already a number of specialized bibliographic databases in existence which collectively cover the majority of the needs of environmentalists, including both major discipline bases and smaller more specific bases covering specialized areas such as pollution, waste treatment and disposal, and bio-deterioration.*

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* A study conducted in 1976 for the Commission of the European Communities identified the ten English-language bibliographic databases covering the largest numbers of environmental references, in order, as Smithsonian Science Information Exchange, Chemical Abstracts, National Technical Information Service, Compendex, Biological Abstracts, Medline, Science Citation Index, Atomindex, Environmental Science Index and Health Effects of Environmental Pollutants. The ten services containing the highest proportion of environmental material in relation to their size were Hazardous Materials Service, United Kingdom Department of Environment Bulletin, Environment Science Index, Applied Ecology Abstracts, Excerpta Medica (Section 46), PASCAL 885, Health Effects of Environmental Pollutants, Wastes Resources Abstracts, Industrial Development Abstracts and Pollution Index.

Yska G. and Martyn J., Databases suitable for users of environmental information. (London, Aslib, 1978)

Their existence not only erodes the possibility of an environmental base becoming financially self-supporting, it removes in large part the necessity for its creation in the first instance; if adequate access can be made to the bases which already collectively cover the field, there is no real need to produce a unified service.

To a considerable extent, the problem of access to environmental bibliographic records could be solved by determined action on the next most strongly supported development, the provision of more general training in information handling for national focal points.

The publication of listings of opportunities for education and training in the environmental field is a somewhat more substantial undertaking than it appears to be, but is something that could be undertaken in the future, possibly on a regional basis, without an overlarge investment of labour or capital. Most national focal point staff are not trained information personnel (although a number are) and are therefore possibly not aware of the range of secondary services likely to be relevant to environmental studies; nor do they necessarily know how to use them. Basic general training in information handling is an absolute necessity in any attempts to move in the direction of provision of substantive information by Infoterra partners (a widely-supported development) and would be of great value not only to the development and consolidation of Infoterra, but also to the realization of some of the goals of UNISIST.

The creation of a database of international environmental data, ranked sixth, raises problems of considerably greater complexity and scale than the creation of a bibliographic database, but problems which, paradoxically, might admit of more practical solution in some cases. Whereas the field of bibliographic records is in principle finite, being limited by the (admittedly huge) number of documents in existence, the field of data is effectively infinite, given the enormous number of basic aspects of the environment on which data can be produced, the even larger number of ways in which they can be related, and the infinitely subdivisible nature of units of measurement. Therefore, the development of a base which would hold all data on the whole of the environment which is likely to fill the total data needs of all environmental scientists, planners and policy makers is totally impossible. However, the creation of special-purpose databanks, developed to meet the particular requirements of a defined region or sector, is both possible and practicable, although often expensive.

What users really want is information, not guides to where the information might be, or documents which might contain it, so the current trend towards the development of databanks is a natural and inevitable response to users' real needs; such bases are usually held in computers, often with add-on software permitting the manipulation and analysis of retrieved data. Given careful study of actual requirements for data, it would certainly be possible to develop some specific databanks which would meet some of the needs of international users. It is also possible that databanks for specific purposes could be co-operatively developed on a regional basis, possibly building on any national databanks which already exist in the environmental field. However, no action could or should take place without protracted and careful study both of requirements and of bases already in existence.

The remaining possible options are not so strongly seen as essential as the foregoing and are not therefore discussed here in any detail. It is, though, worth noting that the support for the establishment of information analysis centres, which, despite its low ranking, more than three-quarters of the national focal points classed as "desirable" or "essential", relates to the desirability of activating sectoral centres or focal points with responsibility for special environmental problems. "Infomation analysis centre" implies a very high order of information-processing activity (very rarely found in practice), and in the present context implies perhaps the development of organizations such as are found in International Information System for Agricultural Sciences and Technology Level II development, which are primarily regional research and information centres in specific problem areas.

The development of such centres lies outside the remit of Infoterra, and possibly outside that of UNEP itself, but it can be seen that there is strong support for some efforts in this direction; certainly, as a first stage there could be some encouragement for some focal points or sources to strengthen their expertise in specific problem areas and possibly to begin building up document collections or information sources relating to these problems.

In general, the comments which national focal points were free to make at the end of the questionnaire tended to reiterate or reinforce those which were made in the body of the questionnaire, notably encouraging of moves towards provision of information beyond referral, comments on the relatively low level of resources committed to Infoterra in national programmes, and the need for improvements to the list of attributes. The points made have been taken into account either in the analysis of the questionnaire or in the conclusions and recommendations presented below.

Responses to the user questionnaire

Two hundred questionnaires (see Appendix B) were distributed to a random sample of persons who were known to have used Infoterra on at least one occasion in the last six months. Usable responses were received from 76 users, a response rate of 38%, which in view of the worldwide distribution of the sample can be considered a very satisfactory response. Responses were mailed directly to the Evaluation Team Leader by users in 34 countries, the distribution being shown below:

Western Europe:	United Kingdom	5
	Greece	3
	France, Portugal, Netherlands, Yugoslavia, Israel	1
Eastern Europe:	Poland	1
North America:	United States of America	7
	Jamaica, Canada	1
South America:	Chile, Argentina	1
	Costa Rica, Colombia	1
Africa:	Kenya, Egypt	2
	Zambia, United Republic of Tanzania, Sierra Leone, South Africa, Ivory Cost, Mauritius, Malawi	1
Asia & Pacific:	India	8
	China, Japan	4
	Malaysia	3
	New Zealand, Thailand, Singapore, Bangladesh, Fiji, New Caledonia	1
UNEP:		2
Unidentified countries:		9

The means by which the users learnt about the existence of Infoterra are too diverse to be meaningfully analysed. They range from reading an announcement in a daily paper, through hearing by participation in various United Nations conferences, contacts with colleagues who work for UNEP or a national focal point, and receiving a publicity brochure, to being invited to become a source. It can safely be said that any method of promotion is likely to influence someone but, in general, the favoured means of learning about a service is by contact with colleagues who already know about it.

Very few users had approached Infoterra more than once, unless they were themselves employed in a national focal point, and most approaches to the system were made through the appropriate national focal point, although 24 users made their approaches directly to the Programme Activity Centre in Nairobi. The users in New Zealand and Singapore (the latter having no national focal point), approached the United Kingdom focal point, and the Canadian user sent his query to the United States focal point.

Seventy users stated the number of sources to which they had been referred by Infoterra, the number of sources ranging from 1 to 199. Twenty-six persons said that they had not referred to any of the sources they had been given, or said they had not yet referred or gave no answer. This relatively high number of failures to contact sources for information does not necessarily mean that a high number of referrals are not followed up because, in a number of cases, the questionnaires were being answered before the respondent had had time to take the necessary action; however, it is true that a late delivery of information about sources in response to a question will often result in non-use of the information, and it may also be true that a high number of overseas sources in an answer, particularly sources in countries speaking a different language, tends to discourage approaches to sources. Approximately three-quarters of sources contacted were reported to be outside the enquirer's own country.

Of the 64 persons expressing a view about the information content of the Infoterra source records, 47 (73%) felt that they provided a sufficient picture of the capabilities and expertise of a source to enable them to decide whom to approach, and 17 (27%) felt that they did not. It is not always clear to what extent users were provided with a full Directory print of the sources they were given, because a few of the suggestions for improvements (such as an indication of working language) are already present in the record but, in general, the dissatisfactions expressed were concerned with insufficient specificity in the attributes and, occasionally, inadequate information about the technical level or competence of a source. Only four sources, it is noted, requested payment for information services.

Table 21 below, shows the forms in which information was provided by sources in response to requests. Because a source often responds in more than one way, for example, by providing both advice and references to publications, the column totals are greater than the number of enquiries to which they refer.

Table 21. Forms of responses by sources
(Numbers of users giving each answer)

	Sources				
	1	2	3	4	Total
Advice	17	5	2	-	24
Reference to publications	17	7	5	5	34
Copies of publications	19	17	9	5	50
Other means (visits, contacts etc.,)	5	5	3	3	16
Information not available	3	3	3	2	11
No response	6	6	5	5	22
Number of people answering this question	49	36	24	18	127

The responses shown in this table indicate that out of 127 enquiries made by Infoterra users to sources, 22 (17%) elicited no response, or, more accurately, no response at the time of completing the questionnaire; a further 11 (9%) were told that information was not available. This means that of the 127 enquiries, 94 (74%) were answered positively in some way. It is noted that the most likely response is copies of, or references to, publications, so that to a significant extent the referral method is producing the same end result as a conventional document-based information retrieval system. Only 24 (19%) enquiries were answered with advice; whether this is a good or bad figure is a meaningless question, because what matters is whether or not the enquirer received the information he needed, regardless of the form in which the information was transmitted.

The users were asked to give an assessment of the information which they had received from sources to which they had sent enquiries, and their responses are shown in table 22 below.

Table 22. Usefulness of information supplied by sources
(Numbers of users reporting on sources' responses)

	Sources					
	1	2	3	4	Total	%
Extremely useful	15	6	5	4	30	28
Useful	20	10	6	7	43	41
Of slight use	3	3	4	2	12	11
Of no use	4	7	4	6	21	20
Totals	42	26	19	19	106	100

These responses show that in answering 106 enquiries put to sources, information which was either extremely useful or useful was received in 73 (69%) cases. This, it is felt, is a very satisfactory figure but, as is always the case with questionnaire responses, it needs a degree of qualification.

It must be remembered responses are not available from all users sampled and, therefore, the figure cannot be taken as absolutely representative of the general success rate of Infoterra use, because it is possible (but perhaps unlikely) that all the non-respondents were system failures; they could also (but even less probably) all be system successes. The figures do not refer to the number of separate questions asked, because users consulted more than one source in seeking answers to their individual questions. They mean that of 106 sources, 73 provided useful or extremely useful information so that, strictly speaking, the figure is an indication of source performance rather than user satisfaction.

Whether information is "extremely useful" or "useful" depends to some extent on the urgency of the enquiry, and in cases where no great urgency exists, there is a tendency to class information as "useful" and no higher. Therefore it is reasonable to aggregate these responses. Similarly, the answer "of no use" may mean several things, including "the information came too late", which is not a function of the information itself; it may mean that "the information was insufficiently specific" or "the information was incomplete"; or it may mean that no information was forthcoming. Very few respondents gave reasons for the non-utility of information; those who did, indicated either a language difficulty or a lack of specificity. There was no apparent relationship between usefulness of information and time taken to acquire it, or between usefulness and effects of delay.

Equally, few persons gave reasons why the received information was useful. The best case is the answer that the information received enabled the respondent to do in one year what would otherwise have taken two or three years, but the general response was of the type "it was useful because it helped us", which is tautological.

The urgency or otherwise of the queries may be illustrated by the answers to question 15, concerning the effects of delays in obtaining information through Infoterra mechanisms. To this question, of 57 respondents, 11 (19%) said that delay had substantially reduced utility, 16 (28%) said delay had slightly reduced utility and 30 (53%) said the delays had had no effect. Perhaps half the questions, therefore, were of reduced urgency, particularly considering the delays involved. Answers to question 14 on the length of time it took to get a list of sources, an average of 24 days, and how long it took to get substantive information, an average of 40 days, show that not only is referral naturally a slow method of getting information but that, in conjunction with the answers to the question on the effect of delays, users know this and tend to use referral mechanisms as a sort of safety net, in cases where there is no great urgency of requirement or when other mechanisms have been exhausted. That it should take an average of 24 days to get a list of sources, either from a national focal point or from the Programme Activity Centre is surprising, and deplorable. Most of the delay is, however, not the fault of national focal points or the Programme Activity Centre. When a focal point feels itself unable to answer an enquiry directly and refers it to the Programme Activity Centre for a Directory search (and some national focal points do this routinely), the referral to the Programme Activity Centre is often made by mail because of unavailability of telex or lack of funds to pay for a telephone call, and in many parts of the world the postal system is very slow.

Where national focal points answer questions themselves by Directory search, the average time taken to obtain a list of sources is reduced but is still in many cases unacceptably high, sometimes of the order of three weeks. It would not be unreasonable for a user to expect an answer to a telephone enquiry within 24 hours, or by return post to a mailed enquiry, and national focal points should aim for this level of performance.

The involvement of national focal points in providing assistance other than the list of sources is shown by responses to questions 10, 11 and 12.

Twenty-five (37%) of the users reported receiving substantive information from their national focal points as well as referral information, 31 (52%) were given advice on which of the referred sources to approach, and in 18 (29%) cases the national focal point approached sources on the users' behalf. Only 8 (12%) users found it necessary to return to the national focal point for further help. These figures indicate that a number of national focal points are already beginning to move towards the role of information offices in a fuller sense and away from the simple provision of a source listing with no further support. The reasons for which the users were seeking information are shown in table 23 below. Multiple responses were allowable, and common. The table is based on the replies of 71 respondents.

Table 23. Reasons for seeking information

Reason	Number	%
For input to a research or scientific activity	34	48
For planning or policy formulation	35	49
For educational purposes	11	15
For operational development	12	17
For industrial or commercial uses	7	10
For public information purposes	11	15
For general information	11	15

Fifty-six (78%) of users were asking a question in their own fields of environmental expertise. The reasons for requiring information are not clear-cut and it is usual to find the categories overlapping as above. The major categories are, as shown, for use in a research or scientific activity, and for use in planning and policy formulation. This might have been expected; the only slightly surprising finding is the relatively small requirement for industrial or commercial uses, which may reflect the lack of Infoterra promotion in the industrial sector and the frequent environmental unawareness of those from that sector.

When attempting to measure the use-rate of Infoterra, a major problem is that once a user has identified a source of information helpful to him in connection with a recurring problem or constant preoccupation, he is likely to re-refer to that source without further contact with his national focal point so that the reported statistics of use under-represent the actual information-acquisition events attributable to Infoterra activity. Users were therefore asked to what extent they re-used sources without further use of their national focal points; and 16 (25%) users reported such re-use. It would be improper to assume that every hundred reported uses therefore represents a hundred and twenty-five actual uses, but it is clear that the reported statistics do provide an under-estimate of Infoterra activity.

The users responding to the questionnaire were encouraged to make any suggestions for the improvement of Infoterra and to voice any criticisms. Not many availed themselves of this opportunity, and not all the suggestions were practicable, but they are summarized in table 24, below.

Table 24. Suggestions and comments from users

Comments	Occurrences
The timelag between original query to national focal point and answer from sources is too long and should be shortened	5
More information of sources should be provided, such as lists of publications, some indications of level of competence, level of funding etc.	5
Infoterra is a good and useful service*	5
Infoterra should be promoted more widely	3
The indexing (attribute list) should be more specific	2
Infoterra should provide substantive information	2
The information product is small compared with that of other information services	1
Infoterra should maintain an inventory of information and data on key sectors of environmental concern	1
Infoterra should supply data on common problems	1
It would be helpful to distribute the list of topics covered to the users	1
Lists of relevant publications should be distributed to specialists	1

* It is interesting to note that of the five laudatory comments, three came from Latin America.

Responses to the source questionnaire

The questionnaire given in Appendix C was distributed to a selected sample of organizations or individuals who are registered as sources in the Infoterra Directory. One hundred and fifty-six of these questionnaires were completed and returned by sources, direct to the Evaluation Team Leader. It immediately became apparent that the resondents were divided into three groups, those who were not previously aware that they were registered as sources, those who were aware but had received no queries from users through Infoterra, and those who both knew they were sources and had answered enquiries. The national origins of these three groups are shown in table 25.

An Infoterra source is defined as an organization or organizational unit which is willing and able to provide information or expertise in response to requests generated through the international system. This being so, in principle every source should be aware that it is registered as a source, because not only has it signified its willingness to become part of Infoterra but also it will have received at some stage a copy of the relevant entry in the Directory for verification. Additionally, the standing requirement for updating or revalidation of source entries every two years should refresh their awareness. It is consequently disappointing, and an indication of system failure, that 48% of sources responding to the questionnaire should be unaware of their involvement in Infoterra. There are several possible explanations. In cases where a national or regional register of sources of environmental information is maintained, there is a likelihood of an appropriate organization being entered as a source on the national listing, which may subsequently be used as input to Infoterra without the knowledge of the organization; willingness to supply information having been confirmed for purposes of the national listing may cause the national focal point to feel it to be unnecessary to reconfirm willingness in relation to entry into Infoterra. Another problem is that agreement to be registered as an Infoterra source may be given by the director or manager of an organization, without informing the appropriate operational staff member who will have initially to handle any enquiries. A related problem is that the individual signifying agreement to registration may move, retire or die, without the responsibility or awareness being transferred to a successor. It is also possible that some national focal points have submitted Directory entries without ever informing the sources in the first instance. Whatever the reason, it does make nonsense of the claim to give access to nearly eight thousand sources of environmental information if only some four thousand of these sources are aware of their commitment.

Table 25. International distribution of sources responding

Country	Unaware	Aware but no queries	Aware, queries
Australia	3	3	2
Bangladesh	-	-	2
Belgium	1	-	-
Bolivia	1	-	1
Bulgaria	-	-	1
Canada	9	3	1
Chile	1	-	-
China	1	3	-
Colombia	3	-	-
Costa Rica	-	1	-
Cyprus	-	3	-
Czechoslovakia	-	-	2
Denmark	2	1	-
Ethiopia	1	-	-
Federal Republic of Germany	1	2	1
Ghana	1	-	1
Greece	-	2	-
Guatemala	2	-	-
Hungary	-	-	1
India	-	2	-
Ireland	4	1	1
Israel	1	3	-
Japan	1	-	1
Jordan	1	-	-
Mauritius	1	-	-
Netherlands	7	1	-
Norway	1	-	-
Philippines	1	1	-
Poland	-	-	3
Portugal	1	-	-
Somalia	1	-	-
South Africa	1	3	1
Spain	2	2	-
Sri Lanka	-	1	-
Sudan	-	1	1
Sweden	-	1	-
Switzerland	1	-	-
Thailand	2	2	-
Uganda	1	-	-
United Kingdom	8	7	2
United Republic of Tanzania	-	-	1
United States of America	13	11	2
Zambia	1	1	1
UNESCO	-	1	-
Total	75 (48%)	56 (36%)	25 (16%)

Because the sources responding to the questionnaire had been registered as sources for varying periods of time from six years to three months, it is not possible to estimate an average figure for the frequency with which a source will be asked for information, but as only 25 of the 156 sources responding had ever answered a query or queries which they knew to have been put through Infoterra mechanisms, it can be seen that the burden on an individual source is not likely to be onerous, at present and probably for some time to come. The qualification to this remark is that most organizations do receive enquiries from the outside world at some time and in some cases the enquiry load can be very high, but it is not always possible to know whether a question was Infoterra-stimulated or not. If the enquirer does not specifically say that he was put in touch with the source through Infoterra, the source has no way of knowing that it is handling an Infoterra request. The 16% figure quoted above is therefore almost certainly an under-estimate.

The three groups of Source respondents are now discussed separately, below.

Naturally enough, little information was gained from the "unaware" group. Seventy-two said that they had never approached Infoterra for information themselves and two said that they had, both these latter being satisfied with the results of their approaches. Forty-nine considered it likely that they would use Infoterra in future and 16 thought it unlikely, sometimes adding that they already had access to excellent and adequate information facilities. Only 1 source in this group had approached Infoterra on behalf of someone else. Unsurprisingly, the most frequent comment from this group was the expression of a desire for more information about Infoterra, 13 making this request.

The "aware but no queries" group produced similar results. Fifty-three had never approached Infoterra for information themselves as against 2 who had (both these last being satisfied with the results). Fifteen felt that they were unlikely to use Infoterra in the future, as against 36 who felt they would; this is a higher proportion of likely non-users than in the "unaware" group, but there is no clear reason for the difference which is not particularly significant. Two had approached Infoterra for information on behalf of others.

Several respondents in this group pointed out the difficulty of distinguishing Infoterra requests from others: a few gave as reasons for their non-use of the system either their access to adequate domestic information systems or the inherent slowness and uncertainty of referral procedures, and two indicated that they would like to see a regular newsletter issued by Infoterra to keep them in touch with the system activities.

In the group of sources who had actually handled enquiries, the number of enquiries varied widely, from 1 to about 80. The average was 10.5 queries but, excluding the three highest figures on the grounds that they represented atypical cases (one reported instance of 53 queries, for example, consisted of 53 requests for the same report), the average drops to a more credible 4.5 requests, with the mode being 1. Eight sources claimed that they could identify all requests for information that they received as coming through Infoterra, but the remainder indicated that the proportion of such requests in their enquiry load was very small. Most Infoterra questions came from outside the country of the source.

The average time spent in handling an enquiry was just under 9 hours, but this included three probably atypical instances of 42, 30 and 25 hours, respectively. Excluding these, the average falls to just under 5 hours, with 1 hour as the mode. Few gave costs other than labour (3 responses), the average being $12.50, although this figure is based on too few cases to be meaningful. In virtually all cases, all queries were answered, with the exception of some four queries which were considered to have been outside the scope of the organizations concerned. Queries were answered in the following ways, many organizations answering in more than one way:

Table 26. Type of respose to requests for referral

	Mentions
Provision of advice based on personal experience	13
Provision of reference to documents	16
Provision of documents	16
A combination of advice and references or publications	12
Provision of analysed information tailored to requirements	8

Again, it may be seen that the system is functioning in part to provide the same responses as a bibliographic information retrieval system.

Seventeen sources said that they never charged for information given (including 2 who said "not yet"), and 4 said that they sometimes did. Eleven never asked for information in return, 9 did so sometimes. Twenty-two have never experienced problems functioning as an Infoterra source, but 3 said they have had problems. Unfortunately, they failed to specify what the problems were, but there is reasons to suspect that the cost of handling enquiries involving relatively lengthy information searches is sometimes a problem.

Seventeen of these sources had never used Infoterra for themselves, but 8 had, which suggests that answering external queries tends to encourage or possibly generate queries, perhaps by alerting organizations to the possibilities of the system. All users expressed satisfaction with the results that they had received. Two felt that they were likely future users of the system, 4 (all in developed countries) felt they probably were not. Eight reported that they had used the system on behalf of others.

Few comments were made by this group: one expressed a desire for training in the use of Infoterra, one felt that there should be a mechanism for funding searches, one felt that his national focal point needed better communications with the Infoterra network, and one thought Infoterra should be more widely publicized.

PART 3.   DISCUSSIONS AND RECOMMENDATIONS

Discussion of the evaluation and its findings

The evaluation

The present evaluation was undertaken at the request of the
Infoterra Programme Activity Centre, as endorsed by the 1979 Moscow
meeting, in order to obtain an objective outside view on the extent
to which Infoterra has succeeded in meeting its goals, and to obtain
recommendations, based on the findings, aimed at the development and
improvement of the system, if it were judged worthy of continuance.

Normally, the evaluation of an information system is undertaken
when the system has reached a state of relative stability, in terms
of its structure, content, organization and user population. In
most cases, this position is not reached until the system has been
in full-time operation for six or seven years, because it takes that
amount of time to build up to a stable user community. The present
evaluation, if it were of an information system only, could
therefore be thought premature inasmuch as, having been operational
only since 1977, insufficient time for the system's acceptance by
the user community has elapsed, and the system itself is still in an
active stage of growth and development, so that the extent of its
use and usefulness will inevitably be under-represented, and will
not necessarily reflect its potential final utility. Conclusions
relating to the information system activities of Infoterra are
therefore indicative rather than definitive.

The present study departs from conventional information system
evaluative studies in that most of these are concerned with the
performance of conventional bibliographic information systems, and
measure that performance in terms of reasonably well-established
criteria, such as coverage, timeliness, recall, precision and so on.
This is often done by the use of trial questions, the answers to
which are evaluated for relevance by subject experts, and are
subjected to failure analysis to identify system deficiences. In
the present case, the evaluation is of a decentralized system which
as its main, and frequently only, response to queries produces a
list of addresses at which the required information has a
higher-than-chance probability of being found, if it exists. This
means that the conventional criteria are not applicable.
Conventional evaluation produces largely numerical data which are
virtually independent of effects produced by the intervention of
humans in the manipulation of the system components, notably the
indexing language. In the present case, the system is entirely
dependent on human interaction, indeed, it is built on the concept
of such interaction, and laboratory-type testing would be
inappropriate.

Instead, this evaluation is effectively subjective, collecting such data as are available but principally collecting the subjective judgments of a number of people concerned in the use and operation of the system, together with the subjective appraisals of a group of concerned but non-involved experts; the whole is then synthesised and reported on, using the informed (but necessarily subjective) judgement of the Evaluation Team Leader and his colleagues. There are precedents, principally in the field of education, for this approach, and it is not considered that the subjective nature of the evaluation in any way reduces its validity.

The most important way in which the evaluation of Infoterra differs from that of a more conventional system is in the greater range and variety of Infoterra's goals. System evaluation identifies the goals which a system was intended to achieve and measures the extent to which they have been reached at the time of the evaluation. Bibliographic systems usually have clearly defined goals related principally to the storage and retrieval on request of bibliographic information or data, and their success can be measured in terms of the accuracy with which the stored information is retrieved. However, Infoterra, like some other international systems, has goals which go beyond simple information retrieval. Among these goals are included the promotion of an awareness of environmental problems, the stimulation of development of national systems for processing environmental information, encouragement of an appreciation of the role of information in environmental decision-making, and the fostering of international exchanges of such information. In short, it has both system goals and political goals, and it is important to remember that both types of goal are valid and that they are of equal importance.

The role of referral in information supply

Because referral is increasingly of interest to designers of international information systems, an extended commentary on the mechanism is given.

The different modes of formal information supply may be illustrated by a simple example. If a user goes to his information officer and asks, "What is the melting point of lead", he may get various responses. The information officer may say, "I don't know, but if you telephone this man, I believe he can tell you." This is referral. He may say, "I think if you look in the Handbook of Chemistry and Physics, in the section dealing with the elements, 47th edition page B-118, you will find it." This is reference retrieval (which is what most bibliographic systems do). He may fetch the book and give it to the user, or give him a photocopy of the relevant pages; this is document retrieval. Or he may say, either from his own knowledge or after looking it up, "The melting point of lead is 327.5 degrees centigrade." This is information retrieval and delivery.

These responses are the types of response that are provided by information systems where the system is directly invoked by the user (as opposed to selective dissemination systems where action is initiated by the system). In practice, of course, the required information is seldom a single fact or element of data, and can often be a mass of legislation or a series of opinions or discussion papers, but the principles remain to a large extent the same; in the complex case, the equivalent of information delivery, the presentation of an analysed review of a mass of information, is information analysis.

Referral systems of the type commonly proposed for international use are generally structured to provide a centralized Directory of sources of information, which can be accessed in either printed or machine-readable form. The differences between systems, apart from subject coverage, concern the means by which input is acquired, and the nature or content of the acquired information.

In most international systems, the information is provided nationally, with each state which is a partner to the system submitting input relating to its own sources. National input is generally centralized in an institution with a national reputation for excellence in the subject field (such as a professional society or a research establishment), a government department responsible for the subject area, or a national information-handling agency such as a national documentation centre. Each type of input organization has certain implicit biases; for example, a learned society may be biased towards its own membership or towards academic research, a government department may be biased towards the organizations with which it most commonly deals in contractual, committee or grant-giving relationships, and a documentation centre may be biased towards organizations or individuals who publish documents (which may reduce the industrial coverage of the file). The ideal for broad coverage of sources in a given field is probably a government department's information unit, which can supplement the sources obtained from its own department's contacts by liaison with the appropriate societies, trade associations, and national library facilities.

For referral services to retain their value, the information given about sources must be as current as possible, in order to minimize user dissatisfaction attributable to changes of address by sources, or changes in sources' interests, or even disappearance of sources. It is not unusual for national lists to require changes to 25% of their entries annually. Input records are usually acquired and maintained by direct mailing of questionnaires by input centres to potential sources, and this must be done regularly in order to maintain integrity of the files. Infoterra national focal points are recommended to up-date their records cyclically, by revalidating 5% of their entries monthly, and this approach is probably the most trouble free. Methods which depend on the sources voluntarily submitting unprompted changes as they occur are totally unreliable.

By whatever means the input information is acquired, it must be edited and checked at the national centre before it is retransmitted to the central body for incorporation in a directory. The editing stage confirms that all required information is given and appears to be accurate. It is, of course, possible to produce lists of sources without references to the sources themselves, by using existing lists and registers, scanning sources of relevant publications or by personal knowledge, but to do this means that one essential ingredient, the willingness of a source to give information on request, is lacking, except in cases, such as some government establishments, where provision of information is a statutory or explicit function. If sources are indexed with terms describing their scope or field of activity, it is desirable that this should be done at the national level, to minimize the problems caused by inter-indexer consistency; no two indexers ever index in the same way, even using predetermined vocabularies, and indexing at the national focal point level at least tends to ensure that all the source entries for a single member states are indexed consistently.

A major problem exists in the selection of sources. The minimum criteria for selection are the ability to give information, and the willingness to do so; the latter is easily determined by securing a written agreement to supply information on request, but ability to give information causes more problems because there is no specification of quality of information. Information possessed by a source may be of international applicability, regional applicability or purely local value and, in fairness to an international community of users, some indicators should be sought of the level of applicability of information a source can provide. Additionally, the information available may be of a high scientific or technical value, or it may be of a lower level, reflecting unconfirmed experience in a local situation. Unless very specific criteria for selection are built into the system, there is liable to be very wide variation in the quality of registered sources. Variation of this kind can be accepted, provided that the user is given adequate guidance in the selection of sources to suit his own particular requirements. If sources are selected by national focal points without some degree of quality control at the system centre and without rigorous criteria, then variation in quality is inevitable.

In this context, a danger exists that as a referral system gains in repute and the value of inclusion as a source can be seen, organizations such as pressure groups or politically-motivated bodies may seek admittance as registered sources. In the environment area, particularly, there are many such groups, and it is not always easy to determine their level and status from inspection of their names and descriptions.

Some such groups may be highly reputable and valuable sources of information, while others may be fringe bodies with eccentric membership and no real status, unable to give unbiased or hard information. The national focal point, on the basis of its knowledge of its own national conditions, must be the first body to eliminate entry of such bodies into the system, and it must be given a clear mandate to enable it to do so.

Sources themselves can be individuals, organizations active in a particular field, collections of documents about a particular field, or abstracting and indexing services covering the field. Individuals can be workers active in the field as consultants, researchers or teachers, and the information they give about themselves for Directory inclusion can usually be either their area of specialization, or some details of current research (this last usually for inclusion in a research register, which is a special category of referral device). As far as possible, inclusion of specific individuals should be avoided, because their inclusion inevitably implies a high rate of change in Directory entries, by virtue of their mobility, mortality and high rate of change of field of interest. Organizations are considerably more stable in all respects. In registering an organization as a source, consent to such registration should be secured at a sufficiently high level within the organization, and it is also desirable that the organizational "contact point" for information (usually someone other than the person agreeing to registration) should be a person occupying a named post (such as librarian, information officer, chief engineer etc.) rather than a named individual, to avoid the problems noted above with regard to registration of individuals. Registration of document collections, whether national general collections of a high level or specialized collections, is always worthwhile, given that much of a user's requirement for information manifests itself as a need for documents; however, in such registrations, the conditions of use and the facilities afforded (i.e. whether searches are conducted, or whether it is necessary to specify the exact document required) should be noted. Notification of abstracting and indexing services as sources is also worthwhile, providing their nature (i.e. abstracts, titles only, annotations etc.) is made clear.

Part of the attraction of referral as an information-gathering device is that it is, superficially at least, familiar to most users and a reflection of their normal information-gathering habits. Many user studies in the last twenty years have indicated that the preferred method of getting information is to ask a colleague or professional acquaintance for information and references, rather than using a bibliographic system (although this tendency may be weakening with the increasing availability of on-line access).

However, in such informal referral activity, the user is generally contacting a person known to him either personally of through his publications, and he is therefore consulting someone of whose relevant experience he is reasonably certain; in a sense, his indexing of his referral network is better than can be found in a formal system designed for the use of many persons. He also has a reasonable certainty of getting an answer or at least a response. At a more formal level, most good information officers have personal directories of persons and organizations active in their organizations' field of specialization, gathered and tested over the years, and they often use referral as an adjunct to the other services available to them. In many cases, the information officer's response to a major enquiry would include some immediately available relevant documents, references to others which can be obtained at the user's request (together with some indications of their probable relevance), and some suggestions for people or organizations who might be contacted for further, more current information or "know-now".

Referral has a number of potential advantages and potential disadvantages. One advantage is that it is potentially inexpensive in operation, because the mechanics of maintenance of a directory-type operation are less complex than the maintenance of, for instance, a bibliographic database, and the access costs are reduced (except that the user has to pay tne costs of contacting sources). The initial establishment of the system is not much less costly than the establishment of a bibliographic system, given that in both cases (on the international level), member states have to be brought into the system in much the same way, and a training requirement exists in all cases, but the system design itself, because of the greater uniformity of the records, is likely to be smaller. The maintenance of a national list of sources is also less arduous than the routine collection and entry of bibliographic data. Although comparative costs of other systems are not available, experience suggests that Infoterra has been less costly to establish than other, bibliographic, systems of a similar international character.

Referral can also give access to information which cannot be got in other ways, because it has not been published or because the relevant work is still in progress. Much information of the "know-how" type, concerning problems encountered in using particular techniques or equipment, or implementing particular policies, is not normally published, and reports of unsuccessful applications, in particular, very seldom see print. Referral promotes contacts between workers in similar areas of knowledge and can, if interaction develops sufficiently, allow transfer of information relevant to tne specific problem which gave rise to the original need. Organized referral systems also provide member states with directories of their own resources, which are useful planning tools in their own right.

Because of its inherent simplicity and undemanding nature, the introduction of a referral system can be an effective starting point for the development of information activities. It provides an easy introduction to information exchange activities and, if successful, can in time help to build up demand for more sophisticated services. Where access to the full range of library and information services is restricted, it does offer a valuable first approach to a full service.

The above advantages can all be illustrated from Infoterra experience. So can the disadvantages. A major practical disadvantage at present is that the system is inherently slow; in the Infoterra system users contact their focal points, the focal points answer users, users write to sources and eventually the sources write back with information. There are four communication links in this chain and in most cases the communications are effected by postal services. Even within the United Kingdom, which formerly enjoyed a speedy postal service, the British Library Lending Division noted in a recent survey (ASM Clarke " U.K. Speed of Post Survey, 1980," Interlending Review vol. 8 No. 3 (July 1980) pp. 100-101) that there had been a marked deterioration in the service, and recorded longest times of transit of a letter between two points as being nine days for first-class and fourteen days for second-class mail. Where the third and fourth links of the chain mentioned above are frequently international, it can be seen that the chances of a speedy response are poor. This is borne out in Infoterra experience, users reporting a delay averaging 40 days in getting substantive information. Delay times within countries can be shortened by the production and wide availability of national directories, which removes the necessity of consulting the national focal point for a list of addresses; for international exchanges, a possible solution would be communication through focal points in the countries concerned, using bag facilities, either existing national diplomatic bag facilities or a service provided with United Nations support operating through UNISIST focal points.

The accuracy of referral is very variable, being a function of the indexing language used, the variability of application of the indexing, the up-to-dateness of directory information and the amount of information about each source which is available to inform the judgement of the user in selecting sources to contact. All these factors are within the control of the system and its focal points. In principle, if a referral system is functioning optimally, it system should function at least as accurately as a bibliographic retrieval system.

Referral can be more demanding for users than use of a bibliographic system because it involves not only a search of the system (usually carried out by the national focal point), but also exchanges of correspondence with each source contacted; it therefore requires a more positive effort than a single use of, say, an abstracting journal. The greater demand, though, falls on the source, which is expected to put in the effort required to give a satisfactory answer and to supply documents where available and appropriate. If this responsibility is properly discharged, it can be an appreciable burden of effort, and not all sources can be expected to respond well.

The motivation of sources to participate fully in the system needs to be continuously maintained. This can best be done by reinforcing the awareness that referral is essentially a co-operative process of information exchange. Sources should be encouraged to participate as users, seeking and receiving information as well as giving it. All referral systems depend heavily on the goodwill of individuals for their proper functioning and everything possible should be done to strengthen this goodwill.

Language barriers are more evident in referral systems than in other means of information gathering because both correspondence from and documents supplied by sources may be in languages unfamiliar to the user, and both users and focal points of Infoterra have noted language problems as causing difficulty. There seems no easy way round this problem. Working languages of sources should be recorded in directories (as is done in the Infoterra system) but it would be worthwhile if users, in correspondence, would also note the languages with which they are familiar.

The evidence collected during the present enquiry indicates that referral as an information-gathering mechanism works reasonably well; that some 60% of sources' responses to users' inquiries were classed as "useful" or "extremely useful" is very encouraging. This figure very crudely approximates to "precision", a measure used in the evaluation of bibliographic information retrieval systems and defined as the proportion of relevant records present in the total response, except that, here, "useful" and "extremely useful" are being substituted for "relevant". Sixty percent precision is quite a good performance from a bibliographic system.

Because of its slowness, referral is no complete substitute for bibliographic information storage and retrieval systems, and is at its best when used in conjunction with other tools. However, it is an important component in local and national information systems and is of greater importance in an international context. Much of the dissatisfaction with referral systems has stemmed from their introduction into countries which possess developed information infrastructures and already have good access to bibliographic databases of long standing; in competition with such services, organized referral is perceived as of lesser value, preference inevitably being given to faster, more familiar mechanisms whose performance is already known.

In societies where access to the full range of library and information services is restricted, referral is of more value, and its value is enhanced in that it can be the basis from which other information systems and services can be developed.

It must be borne in mind that the introduction of referral services, like the introduction of bibliographic databases, tends to increase demands for documents. Sources often send documents in response to enquiries, but many send only references to the published literature or to semi-published govermental report materials. A common requirement of users, and a first concern of most national focal points, is some assistance in document location and provision.

The strengthening of national information infrastructures

The success of a referral system, as of any information system, depends heavily on the willingness of its potential users to utilize the services offered. In the field of environment information, this willingness is related to the relative priority given by governments to environmental protection and development, and the general population's awareness of environmental problems, as well as to the existence or otherwise of a cultural orientation towards searching for and using information for solving problems. This search orientation is closely related to the stage of the country's industrial development and also to the educational philosophy and methodology taught by its schools and universities.

Because of the strategic importance of user's demands for information systems, the role of Infoterra national focal points as promoters of a general awareness of environmental problems and of environment information is fundamental. It is particularly crucial at present when, because of rising oil prices, growing national debt in the Third World, rising consumer expectations etc., the priority assigned to rapid economic development at all costs far exceeds that given to the need to protect the environment. This low priority paradoxically coincides with a remarkable expansion of citizens' environmental awareness and involvement, represented by the growing number of grass-roots voluntary associations interested in ecology.

Within this context, the best means of reinforcing and increasing the utility of the Infoterra system would seem to lie in the strengthening of national information systems in the environmental area, including their promotional and educational capabilities. An active national system would not only satisfy the need for acquiring available environment information but also would increase the interest in information available beyond the national frontiers.

The Infoterra system and its elements

The Programme Activity Centre

The Programme Activity Centre has its headquarters in Nairobi, while the Computer Unit is located in Geneva. Its present budgeted strength includes a Director (D1/D2), a Deputy Director(P5/D1), a Chief, Network Development Unit (P5/D1) and a Chief, Computer Unit (half-time)(P5), 4 Programme Officers (1 P4, 2 P3/4, 1 P3) a Programme Analyst (P2) and an Associate Programme Officer (P2), making a total of 10 staff listed at P2 and above. Together with a provision for consultancy services (which includes the evaluation), the budgeted 1980 cost for these staff was $419,000, including $40,000 in non-convertible currency. Administrative support, covering an administrative assistant, 5 secretaries, a research assistant, 2 reproduction assistants and a small provision for temporary assistance was budgeted at $110,300. Not all staff posts were filled at the time of writing. It is also noted that most members of staff, particularly the Director and Deputy Director, spend appreciable amounts of time on other UNEP activities which are not directly related to Infoterra operations. Travel was budgeted at $80,000 (including non-convertible currency), group training, meetings and study tours at $70,000 (including non-convertible currency), equipment at $25,000, and miscellaneous costs (including production of the Directory) at $155,400, making a grand total of $900,000, which includes $100,000 in non-convertible currency. Not a great deal can be said about these costs, which are affected by United Nations salary levels, the location in Nairobi, and prevailing prices. No comparative costings of other international referral activities can be found, and costings of other United Nations systems would not be very useful for comparison purposes because of the different natures of their inputs and outputs; but it is fair to say that total costs are not surprising for a system of this scale.

Much of the work of the Programme Activity Centre to date has been devoted to recruiting countries to participate in Infoterra, and in visiting the national focal points newly established in order to give them such guidance as is possible. These tasks appear to have been performed satisfactorily, and the result is that Infoterra as a concept has built up an encouraging level of enthusiasm in many of its partners (although not all). Promotional material has been produced and made available, and this has been of good quality although not all of it has been suitable for direct adaptation to promoting Infoterra use on a national level, that is to say, it promotes the general concept of Infoterra, without necessarily emphasing the national focal point's role.

Some criticisms have been made at various times and by various elements of the network during the present evaluation. The first is only partly the responsibility of the Programme Activity Centre, and concerns the ease or otherwise of communication with the Programme Activity Centre. By no means all national focal points have access to telex equipment, and most rely on the postal services for contact with the Programme Activity Centre. These are uncertain, and the net effect is that communication between the Programme Activity Centre and national focal points is less than adequate. It is unfortunate that something which is supposed to be the centre of a worldwide communications network should be located in a place which is some way from being the ideal communications centre. A partial solution would be to have a clause in any agreement by a government to establish a national focal point which would require that government to ensure the availability of telex to their national focal point.

Another criticism is a consequence of the apparently strong desire of the Programme Activity Centre not to be seen to be the "manager" of the network in any direct sense, but rather to encourage the national focal points themselves to take a managerial role. Infoterra has, it is frequently said, been conceived as a decentralized network and the focal points manage themselves. However, a number of focal points specifically said that they would wish that the Programme Activity Centre would manage the system more effectively and more directly. What this means has not been spelt out explicitly but, by implication, it means, inter alia, the development and promulgation of stricter criteria for source inclusion, the specification of minimum standards for the staffing and equipment of national focal points, and other steps directed at improving the quality and homogeneity of the system. It also implies that more effort needs to be spent on stressing to national focal points that in large part the management of the system is their own responsibility.

So far as can be determined without detailed analysis, the computer services operate effectively and economically; it is particularly worth noting that production of the Directory by an outside contractor results in a considerable economy, compared with the likely cost of in-house production. The tapes produced are clean and easily manipulable, partly because of their fixed-field format, and the processing software is reasonably portable. The direct telex connection is also effective. It must be remembered, though, that for most of the world computer services from Infoterra are limited to having searches performed by computer in response to a postal enquiry, and it would be worthwhile to consider the feasibility of making computer services available on a regional basis at selected focal points, as has been proposed in the case of the Asian and Pacific region. Full programme documentation should be available for the make-up and search of the machine file.

National focal points

The Infoterra national focal points are the key elements in the
network. They provide the input for the Directory, and they are the
first point of contact, in principle, with the users who need the
information to which the Directory can guide them. They vary
immensely in quality and performance. Of the 110 national focal
points currently listed, probably about fifty may be said to be
effective, with a considerable degree of regional variation. There
are a number of reasons for the ineffectiveness of the majority.
One powerful reason is a general lack of environmental awareness,
not in the sense that individuals or nations do not have a general
concern about environmental problems, but rather that such problems
take second place to more urgent problems of simple survival; faced
with widespread poverty and hunger, or a failing
economy, or other problems requiring urgent short-term actions in
the interests of survival, longer-term considerations necessarily
take second place. A stronger reason, within the environmental
community (as within most) is a lack of information awareness, a
failure to realize the need for and use of information. Both these
factors tend to foster a situation, very common within the Infoterra
network, where a national agreement to the establishment of a focal
point has been secured but without any concomitant committal of
adequate resources. All too frequently the commitment is seen as
just another international agreement to which no more than lip
service need be paid. It is strongly felt by a number of focal
point respondents, and by the Evaluation Team, that when a
government agrees to the establishment of a focal point, this
agreement should include a commitment to the provision of an agreed
minimum scale of resources, financial, material and staff.
     A more domestic factor contributing to the ineffectiveness of
national focal points is the type of organization in which they are
most frequently located. Their location tends to be within a
department or ministry of state which has a responsibility for
environmental planning and administration. It is evident, however,
that the most favourable location for a national focal point is in a
unit to which persons and organizations normally and habitually
resort for information, which in most cases means a unit which has a
responsibility for information handling, storage, retrieval and
dissemination, rather than in a unit which is more oriented towards
the planning of environmental policy (such as a policy, planning or
co-ordinating unit). "Information unit" in this context does not
mean a unit which is responsible for a public relations function on
behalf of its parent organization, but a general information-
collecting and query-answering unit.

It is appreciated that many countries do not possess such a unit
handling environmental information, nor in some cases is there an
adequate trained cadre of persons to staff such a unit; in many
cases the national infrastructure of information supply is
underdeveloped. Infoterra will never function with maximum
effectiveness until this situation is remedied. It is not a problem
of UNEP alone, it is a problem realized to some extent by other
United Nations agencies, notably UNESCO, and it is a problem which
can only be solved by longterm co-operative action on a global
scale. Some recommendations directed towards a partial solution are
given later in this report. It is noted that if adhering
governments are to be given guidance on the resources needed by a
national focal point, guidance should also be given on the preferred
type of location. Many national focal points find some difficulties
in using the tools and procedures of Infoterra, and although these
tools are themselves not perfect, much of the difficulty arises from
the national focal points' own inexperience and lack of familiarity
with information tools and processes. The present position means
that in a number of cases the Infoterra national focal points are
not appropriate professional partners for information sources and
users, who may be more qualified both in the field of the
environment and in the field of information transfer. Dialogue
between them is difficult, and this explains to some extent why
national focal points are not maintaining a permanent working
relationship with sources and users, which tends in turn to reduce
the usage made of the system. However, in view of the suitability
of focal point managers, with policy or co-ordination functions, for
the promotion of the political goals of Infoterra as opposed to the
information goals, it is desirable that both policy-oriented and
information-oriented staff should be involved in national focal
point operations.

There are indications that when an national focal point is
designated, its major function is seen as being the organization of
a list of sources and the processing of requests for information.
This interpretation is encouraged by the summarized role and
activities of a focal point described in the Infoterra Operations
Manual. It should be made clear to national focal points that the
other goals of Infoterra, such as the promotion of awareness of
environmental problems and of the value of information in
decision-making, are also national focal point goals, and that they
should be pursued with equal vigour.

One immediately visible indication of the lack of professional
information involvement and of resources in national focal points is
the present difficulty with the reregistration of sources for
inclusion in the Infoterra Directory.

With a few exceptions, and despite an allowance of two years during which a national focal point is expected to up-date its list of sources is expected to up-date its list of sources, many national focal points are failing to provide a revalidated list for inclusion in the next issue of the Directory, with the result that the next edition is likely to be somewhat smaller than the present one, despite the accession of a number of new member countries to Infoterra.* The actual numbers of sources registered by each national focal point is in fact considerably less important than their quality and number of sources should not be used as a measure of activity or effectiveness; but it is obvious that internationally distributed information about sources of information should be accurate and up-to-date, or the whole concept of a directory fails.

Another indication is the relatively low usage of the system, which is mainly attributable to a lack of awareness of, or a lack of confidence in, the national focal points among the community of potential users. Although it takes a very long time to build up awareness and confidence in a user community, continued promotional efforts coupled with high performance are the only way of achieving this.

It is noted that the findings expressed above reflect the answers to the questionnaires to some extent, but to a greater extent are based on the findings of the regional consultants. There is reason to suppose that the questionnaire returns reflect a more optimistic view of Infoterra than is the case in reality, because in any such survey the responses tend to come from the more motivated or involved members of the community being studied.

Sources

The most striking observation about sources is that nearly half of them are unaware that they are registered as sources of information in the Infoterra Directory. As the criteria for inclusion are that sources should be able and willing to provide environmental information, which implies active consent to registration, this very high level of unawareness of identity is a major system failure.

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* Note. Since this report was written, an intensive effort by the Programme Activity Centre has resulted in almost full revalidation, but the basic argument above still holds.

A large part of the responsibility must lie with the national focal point for failing to maintain adequate contact with their registered sources; obviously little has been done to maintain the sources' awareness of partnership in Infoterra. Awareness would probably be maintained at a satisfactory level if the flow of enquiries were sufficiently large but, at present, the receipt by a source of a request for information is a low-probability event. Changes of personnel within organizations encourage sources to forget their identity as sources; this means that steps should be taken by national focal points to ensure that the responsibility for acting as a source is assumed as an organizational responsibility, and a designated post (preferably a librarian or information officer) is assigned responsibility rather than an individual. Occasional informal contacts, or issue of an occasional newsletter would also help to preserve a sense of belonging to the system. Such a high level of unawareness gravely reduces the credibility of the whole system.

It is noted that there are great variations in quality of sources, which range from national centres of excellence to local ramblers' clubs. This sort of unevenness, which is very visible to persons using the Directory, tends to make the system appear less than serious. As noted earlier, criteria for inclusion of sources should be made more explicit and be more firmly enforced.

It has been noted by some users and by some national focal points that not all sources respond to enquiries, or respond effectively. Given that many are unaware of their commitment, it is scarcely surprising. If sources fail to respond, their national focal point should attempt to find out the reason and should, if necessary, drop them from their national listing for inclusion in the Directory. If enquiries addressed to sources were made through the agency of the national focal point (assuming the national focal point to be capable of handling requests in this way), it is felt that a higher response rate could be obtained and the detection of defaulters made somewhat easier. Inclusion in the Directory of a source which does not answer to requests is a complete waste of time and, again, reduces the credibility of the whole system.

Users

On the whole, those users who have responded to the questionnaire appear to have been satisfactorily served by the system, with a success rate in gaining information which is comparable to that obtainable by more sophisticated systems.

Their major complaint is of the slowness of access to substantive information, which has been noted above. There are at present not enough users, which is a function of the under-promotion at the national level of the system. It is difficult to say what a satisfactory level of usage would be, but the estimates of the usage which would be achieved given adequate promotion which were made by the national focal points in their questionnaire responses suggest a three to six-fold increase over the present usage. The existing query traffic is almost four hundred enquiries a month; this implies a future traffic in a fully developed system of about sixteen hundred monthly enquiries worldwide.

Infoterra was designated to provide information for decision-makers; this may be interpreted as meaning for those who make policy. The present group of users reported that in 49% of cases the information sought was needed for planning and policy formulation and (with some overlap) in 48% of cases for input to a research or scientific activity. Given that scientists greatly outnumber policy-makers, these proportions may be considered satisfactory, if, as seems reasonable, the system is to be open to all who need environmental information. Nevertheless, it is still necessary to direct Infoterra promotional activities at policy-makers and those who supply them with information.

Not much confidence can be attached to the statistics of current use. Some national focal points do not report all appropriate enquiries, and some repeat enquiries will be made by users of sources, of whose existence they have learned through Infoterra, without going through the national focal points. These considerations tend to reduce the reported number of searches. Sometimes questions are referred by one national focal point to another (the amount of query traffic between national focal points is substantial) which probably leads to double counting, and some national focal points report even the most trivial enquiry not involving use of the Directory or the network; these factors tend to exaggerate the reported number of queries. In principle, almost any query on an environmental topic is a potential Infoterra question, and it is evident that many questions which are received and answered by focal points either directly by the use of Infoterra tools, or more frequently with information which has been acquired by virtue of operation as an Infoterra focal point but is not specifically ascribed to Infoterra activity, could be counted as being Infoterra questions, but are not so recorded. Given these considerations, the reported numbers of queries should not be used as more than the most general indicator of activity.

All the indications are that what users want in response to their enquiries is, finally, a document or documents. Therefore, some consideration must be given to the question of document provision.

Infoterra tools and procedures

The principal information tool is the Directory of sources.
This lists all verified sources notified by national focal points,
in alphabetical order of countries. The order of listing sources
within countries is not immediately apparent, so that, for example,
a national focal point wishing to use the Directory to verify the
address of a source which he imperfectly remembers is obliged to
examine all his national entries in order to find the one he seeks.
Instructions for use of the Directory are given in the Infoterra
Operations Manual. It would be helpful if these were repeated in
the Directory itself; it is understood that this is being done in
the next edition of the Directory. Alhough there are many
complaints of the difficulty of using the Directory and of its
complexity, it is felt that these principally arise from a lack of
familiarity with indexes and other information tools generally. As
compared, for instance, with the Science Citation Index (TM), a
widely known and used major secondary service, the Directory is a
model of large-print clarity, and extremely simple organization.
Considered solely as the production of a long listing from
computer-stored information, the Directory is well-produced and
deserves praise.

The list of attributes which gives access to the information
content is not in the same category. It bears all the hallmarks of
a listing produced by subject specialists rather than information
specialists, based neither on empirical study of the input material
to be indexed nor on a theoretical analysis of the field of the
environment. There is no structure other than a rough grouping into
major subject areas. It is a hybrid between a thesaurus of
descriptors and an old-style subject headings list. Its inherent
lack of specificity, coupled with its use by non-professional
indexers to describe the registered sources, makes Directory search
a somewhat rough-and-ready way of identifying sources of information
relating to specific problems. This means that after a search, an
editing stage using the brief description of the source is very
necessary. Given its many defects, it is surprising that it works
as well as it does. An information scientist could make reasonable
use of it, having been trained in the use of ingenuity to overcome
index perversity, but in the hands of amateurs it is a very blunt
instrument.

The Operations Manual is a helpful aide-memoire for national
focal points, although it would be more useful as a teaching text if
it were less concise; as it stands, some parts are very compressed
and assume a degree of information sophistication which is not
always present in the users. The examples of completed forms are
very helpful, although some of the forms themselves are complex.

A few national focal points have commented that the Infoterra system is "too bureaucratic", by which may be meant that the chain, user-national focal point-user-source-user is too complex. There are two main modes of operation of a national focal point, the alternative being a situation in which the focal point contacts sources on the users behalf, the chain then being user-national focal point-source-national focal point-user. This alternative is considerably less laborious for the user, is likely to be more productive of responses from the sources, allows more exact monitoring of the use of the system and of source performance, and affords the national focal point the opportunity to build up its own document collection by copying the responses before passing them to the users. It does require considerably more effort on the part of the national focal point, both in refining the query in dialogue with the user, in contacting the sources (with the user's agreement) and possibly in screening the information obtained before passing it to the user. Both modes of operation are acceptable, and implementation of one or the other, or both, depending on circumstances, is at the discretion of each individual national focal point. If "bureaucratic" in the comment referred to is a reflection of the user's perceptions, then the alternative mode of operation might be seen as less bureaucratic. It may, however, be that the bureaucratic label applies to the forms and documents used in the Infoterra system administration; if so,this complaint does not appear justified.

System training is conducted by running courses for focal point staff mainly in model focal points. The training is specifically oriented towards focal point operation, and a course of roughly a week's duration covers source registration, source revalidation, use of the Directory in query-answering, liaison with the Programme Activity Centre, and the use of various documents concerned with the system. Because for many attenders, taking a course involves travelling to another country, or for other reasons, it not infrequently happens that the course attenders are focal point managers who are not usually involved in the day-to-day operations of national focal points. It would be more useful if the actual operating personnel were the ones trained.

Generally, the quality of instruction is reported to be satisfactory but a general desire for some practical experience in a fully operational national focal point is expressed. A need for basic training in information handling is also clearly felt.

Relations with other agencies

A questionnaire was distributed to United Nations agency focal points or sources, and interviews were conducted with some, but generally the response was disappointing. Regrettably, the attitude of other parts of the United Nations family to Infoterra can best be described as apathetic. In general, United Nations staff appear to need principally managerial information related to those activities which they are administering, and Infoterra is of little use to them in this respect. They tend to have their own sources of information, which are found adequate, and they are always prepared to give information (i.e., to act as sources) within their own areas whether they are listed as sources or not. Consequently, at the individual level, there is little sense of interest or involvement. At a higher level, it is apparent that the territorial imperative operates to foster a slight degree of hostility among members of the United Nations family whose interests overlap.

It is not unusual to find United Nations information systems to be developed without much reference to other overlapping activities within the United Nations field of interest, and the relative unawareness of Infoterra is not felt to be uncharacteristic, however unfortunate. A degree of co-ordination with HABITAT is in principle required, but although both HABITAT and Infoterra are based in Nairobi, there seems at present to be no concerted planning of the ways in which co-ordination can be implemented, although relationships between the two organizations at the personal level appear to be satisfactory.

Infoterra operates within an existing United Nations information environment. It must make further efforts to take into account the existing information programmes, organizational structures and the operational and planned information systems and networks. It should maintain close working relationships with them.

The United Nations system has developed large and very diversified information activities, which could be divided into two main groups: information programmes which are intended to assist in the creation and development of international and national information systems; and scientific and technological information services, systems and networks designated to provide direct information service to users.

The existing information programmes of United Nations agencies are either of general nature or are programmes related to the specific activities of existing or planned information systems or services.

There are, within the United Nations family, two programmes of a general nature. One is designed to provide a conceptual framework and tools for the establishment and development of information systems and to facilitate access to the world information resources: this is the UNESCO/UNISIST programme.

The second is intended to create the necessary conditions for interconnection and compatability of internal United Nations information systems: this is the IOB programme.

The remaining information programmes of a specific nature are oriented towards disciplines, missions or sources. They are usually programmes supporting activities for specialized information systems or services.

According to the IOB Directory, there are over 300 information systems and databases maintained by more than 30 United Nations bodies. They vary widely in size as well as in scope.

In addition to the operational information systems, establishment of new systems and networks within the United Nations family is being planned: for example, the UNDP development information network and the UNESCO international information system on new and renewable sources of energy.

It has been mentioned that the body responsible for co-ordination of existing and planned information systems of the United Nations family is the IOB. The task is not an easy one. The existing systems demonstrate the great variety of purposes, sophistication, levels of development and user groups. Traditional inter-agency differences of opinion underline this variety.

Some basic problems

There are some basic problems of a general nature which have to be taken into account when assessing the present performance and future development of Infoterra. The present level of demand for information provided by formal referral services is low, although it is well known that at the informal level, and particularly by the exploitation of "invisible colleges" and similar networks of personal contacts, referral is a long-established and heavily used means of information acquisition. Formal international referral systems are novel devices, Infoterra being the first of its kind, and, in view of the length of time required for a new information system, particularly of a novel kind, to establish itself, low use at present is to be expected. Further promotion and education are the necessary precursors to habituation. One factor affecting usage is that most sophisticated users (and Infoterra is aimed at decision-makers), especially in the developed countries, have their own sources of information with which they have become familiar and whose performance they know. Many of the questions answered by Infoterra can be answered, at least in part, by the use of other means, to the satisfaction of the user. However, the use of the referral system can, in favourable circumstances, give access to more up-to-date information or to local information which in many cases is otherwise unobtainable through bibliographic systems.

Much of the dependency of tne developing countries on the developed for information and information services is principally bibliographic in orientation, manifested as a need for bibliogranic search, document location and delivery. It arises because most developing countries suffer from a massive shortage of trained and experienced information workers and a general lack of resources sucn as libraries, at all levels. Tney also lack the infrastructure which can support and develop good information services, including training facilities to produce the necessary staff. Political instability, a weak economy and tne lack of foreign exchange for the purchase of materials exacerbate the problem. Without trained information workers, an information system cannot be run or exploited effectively; nor can dependence on other countries be reduced. However, it must be remembered that one of the implicit goals of Infoterra, and of a number of other United Nations-sponsored international systems, is to assist in some way in the development of national capabilities for information-handling, and it appears to be tne case that Infoterra involvement has had some beneficial effects in creating in some countries a greater awareness of the value of information and of informàtion services.

A further problem is that of the allocation of adequate resources to participate fully in international co-operative information systems. Agreement to participate in international systems is given by politicians, who thereby commit their countries. This does not necessarily mean, however, that funds will be earmarked for the information operation. The agencies whicn are given the responsibility for implementing the involvement generally have a mandate to serve their own constituents but have very little, if any, international commitment, and even if sufficiently motivated to participate may be restrained by lack of resources from full participation. In some countries (particularly some developed countries) there may also be a feeling tnat the national contributions to United Nations agencies adequately satisfy international obligations, and participation in international systems represents a further, unbudgeted aid commitment. Tnis attitude is founded on misconception, and an inadequate appreciation of the extent to which benefits, in the form of information which is otherwise difficult of access, can be, and frequently is, derived from use of these systems.

Another problem which should be mentioned here, because it affects Infoterra users although it is a problem encountered in most information systems operations of whatever kind, is the problem of document location and acquisition. As far as the location of published (i.e. journal or monograph) material is concerned, tnere are few real problems because although obscure titles may only be found in one or two places, these places are well-known; the British Library Lending Division or the United States Library of Congress can be depended on in the vast majority of cases.

Tne acquisition of this class of material may be a problem if payment is required, as is usually the case, because of problems posed by non-convertibility of currencies.

The standard answer to this problem is the use of UNESCO coupons, which are expressly designed to assist payment for documents by countries with non-convertible currencies; however, these coupons are not always readily available to all potential users and a practical problem still exists.

Documents which are not fully published, or whose publication is not notified in a standard bibliography, create different problems. Many government reports, or reports produced by committees or specialized groups for the use of particular communities are frequently not widely notified because they are conceived as being written for the information of a small number of directly interested persons, but it is often the case that there is a wider interest in their content on the part of similiar specialist groups in other countries. This type of material is a problem in all countries, and although some such literature, for example, reports, standards and theses, are covered or are beginning to be covered in a number of countries, it still remains a major worldwide problem. Given knowledge of its existence, copies can often be obtained from the producers but here again payment problems sometimes arise. It is not surprising that the Infoterra focal points ranked assistance in obtaining documents first in their list of desirable system improvements.

Conclusions

UNEP was mandated by the Stockholm Conference to organize an international referral service for sources of environmental information. Later decisions of the Governing Council of UNEP endorsed the development of Infoterra as a co-operative and decentralized network of national focal points, with UNEP playing a co-ordinating and catalytic role. Infoterra now exists as a network with 110 national focal points, more than any other international information service with the exceptions of UNIDO/Industrial Information System and the World Weather Watch, and publishes a Directory listing 8466 sources of information in 79 countries This is a considerable achievement and a justification of the effort which has been put into the design and implementation of the network. It can therefore be said that the original mandate has been fulfilled in terms of the existence of the structure which was required to be created.

There were, however, no levels of performance specified in the mandate against which achieved performance could be measured. Considered as a whole, Infoterra can truly be said to be an effective network, but elements of the network vary considerably in their contribution to the whole. Many of the focal points are not yet effective for reasons which include lack of adequate support given to the system in some countries, lack of trained professional staff, and a general unawareness of the value of environmental (and other) information.

The level of use is also low, although it should be remembered that Infoterra was not designed to replace any existing systems, but to supplement them and to fill a perceived gap in information provision. As has been pointed out above, it takes a number of years for the use of a new information system to build up to a satisfactory level, so that too much weight should not be given to the present use rates, except in so far as they justify the very evident need for more, and more intensive, promotion of Infoterra at the national level.

Considered solely as an information system, Infoterra functions satisfactorily in terms of its ability to provide information, although the time taken to receive substantive information in response to an enquiry is longer that is desirable. No formal assessment of efficiency of the system (that is, a study of whether the visible system outputs could be produced at lower cost within the United Nations framework) is practicable at the present time because the system is still in a development stage and it is not possible to isolate development and operational costs; however, it seems reasonable to assume that when the network is fully developed and the routines of source registration and query handling are well established throughout the whole system, Infoterra has a high probability of operating at a satisfactory level of efficiency.

Cost-effectiveness analysis is also impractical, inasmuch as this would involve consideration of whether alternative systems for securing the same system goals (for example, the provision of access to information sources) could be operated more cheaply, and it is difficult to conceptualize a method whicn would operate as effectively as, but more cheaply than, the referral method as exemplified by Infoterra.

Although in a strict sense cost-benefit analysis is also impracticable, as this would require reducing the global benefits from Infoterra operations to a cash value basis and comparing them to the capital cost of producing these benefits, nevertheless it is possible to make some comments on this topic. It is strongly felt that Infoterra benefits to be considered should include not only the information system activities per se, but also its effects in promoting development of national infrastructures for handling environmental information, in promoting international information exchange and in developing a worldwide awareness of environmental problems and the role of information in answering those problems. These aspects are not easily measured but there are substantial indications that (although most successful when able to be integrated into existing well-developed national structures, as in the Eastern European region) some progress has been made in creating nuclei of national environmental information systems. There is more evidence to support the finding that individual contacts between users and suppliers of environmental information have been strengthened, to the extent that if Infoterra were to be formally dismantled as an international system, the relationships built up in, for example, Eastern Asia and in Latin America would continue to exist and develop. There is also some evidence to suggest that environmental awareness is growing, although the extent to which this can be assigned to the influence of Infoterra is uncertain. On these grounds, and taking into consideration the benefits associated solely with the information system aspects, it is considered that the over-all benefits of Infoterra operations to date, in terms of contribution to the goals of UNEP, have been worth their cost to the UNEP budget.

It should also be noted that all but a very few of the focal points responding to the questionnaire stated that they believed the benefits that their countries had derived from Infoterra had been worth the (admittedly often low) cost of Infoterra involvement to those countries.

Recommendations

A number of recommendations follow which collectively imply substantial development of Infoterra at all levels, based on the existing structure of the system. Within the scope of the present report, and given the time constraints imposed on the Evaluation Team, it is not possible to do more than indicate the directions of change, leaving much of the detailed implementation tactics to be worked out by another body, in the light of UNEP priorities and available resources. The recommendations are presented under the headings of future strategy, promotion of Infoterra, national focal points, the Programme Activity Centre, system tools and elements, and links with other systems. All the recommendations are considered to be necessary for the improvement and successful development of Infoterra, but within each group the recommendations are presented roughly in descending order of importance.

It should be borne in mind that the necessary changes envisaged are not seen as being brought about by UNEP alone. They are evolutionary changes which must take place as a result of co-operative actions between UNEP, acting as a guide and support, and the Infoterra partner countries acting in a spirit of enlightened self-interest.

Future strategy

1. It is recommended that Infoterra activities continue to be supported at an appropriate level within UNEP.

2. It is recommended that the Infoterra network move beyond the provision of referral information alone towards provision of some substantive information to users, and the intention to develop towards provision of substantive information through Infoterra should be incorporated in a revised mandate.

Provision of information and access to information is the visible means by which the goals of increasing awareness of environmental issues and the deployment of information resources in their resolution are pursued. It is vital that this means, the most visible and pervasive of the activity of UNEP, be as effective as possible. Referral is a useful initial activity, complementary to other channels of information flow, and is the core activity which binds the network together, so that it should be retained as a basic Infoterra function, but it should be supplemented at the national level by such other information service as may be practicable and possible.

This recommendation does not imply the creation of a central bibliographic system, or a centralized document location and delivery activity. The goal is that the national focal points themselves should be encouraged and assisted to develop themselves, as soon as resources permit, into units capable of providing or arranging the provision of both substantive and referral information in response to user's needs from their own resources and those of the Infoterra partners.

3. In order to capitalize on the resources already existing, and the degree of regional willingness to co-operate which is evident, it is recommended that the future structure of the Infoterra network should be such that the national focal points are grouped in regions each with a model focal point which becomes the regional centre. The function of a regional centre would be to act as a service centre for itself and its regional partners, to allow the economic use of services such as computer search facilities, training, Directory production and development of promotional material, which may be uneconomic to implement on an individual focal point bases; it is essentially a resource-sharing device. Some financial or material support should be given to regional focal points to assist them in assuming their full role. Although based on geographical considerations, the structure should not be so rigid as to preclude the division of large regions into smaller ones as the network develops.

4. It is recommended that ways of strengthening and improving communication facilities among and between the Programme Activity Centre and the national focal points be sought, either by encouraging the use of facilities available to other United Nations agencies, by efforts to improve and strengthen existing telecommunications facilities, or by exploring the possibility of a United Nations "bag" service.

5. It is recommended that national focal points or any other participating organizations with particular expertise in specialized areas of the environmental field should be designated, with their agreement, as sectoral focal points with a special responsibility for collection of information in their area of specialization. When a clear need for the development of a specialized bibliographic or other data base can be shown to exist, its development should be entrusted to the appropriate sectoral focal point. However, no base should be developed without a clear demonstration of the inadequacy of existing bases and of the need for its development.

Promotion of Infoterra

There is general agreement that Infoterra needs increased promotional effort in order that its utilization be increased. Increased use depends on development of awareness of environmental problems, awareness of the nature of the environment and its relevance to development and welfare, awareness of the importance of environmental information and awareness of Infoterra services and advantages. Potential users are not only occupationally heterogeneous, including politicians, academics, industrialists and educationalists, but are at different levels of awareness; they differ also in the channels by which their awarenss can be stimulated.

6. It is recommended that an increased proportion of Programme Activity Centre effort be devoted to assisting national focal points in developing and implementing promotional efforts, including the provision of training in promotional methods and the use of new promotional media. Assistance should also include the provision of prototypes of promotional materials.

7. It is recommended that promotional activities connected with Infoterra should be concerted with United Nations agencies which have or operate international information systems, so that in addition to developing the use of Infoterra and the other agencies' systems individually, there is also an effort to promote the United Nations collectively as an information supplier.

8. It is recommended that promotion of the information system aspects and products of Infoterra should be directed specifically to the intermediary community of librarians and information workers, and that promotion of Infoterra as a whole, including its information role, should be directed towards the larger community of scientists, technologists, educationalists and the general public, but with special emphasis towards decision-makers at planning and policy levels.

9. It is recommended that greater efforts be made to promote Infoterra within UNEP itself, both within the UNEP headquarters and at the regional level, so that not only it is known about and understood, but also used to identify sources of information, produce mailing lists and improve communication between UNEP and its target communities. Efforts should also be made to promote an awareness of Infoterra within other United Nations agencies.

10.   It is recommended that national and specialized libraries and documentation centres, and other interested parties, be given the opportunity to acquire the printed or tape Directory of sources. The Directory should contain introductory and promotional material about Infoterra.

11.   It is recommended that sources on registration be requested to submit to Infoterra a question on their topic of interest in order that they may have some practical experience of the system of which they are becoming a part. The responses they receive should be evaluated by them and a report made to their national focal point on the results.

National focal points

12.   It is recommended that in designating a national focal point, governments should be requested to undertake provision of a minimum range of resources, which should include adequate financial provision for Infoterra activities, including communication and promotion, document acquisition, telex and photo-copying equipment, and staff trained in information handling. In the majority of countries which are already members of Infoterra, re-negotiation of membership on the basis of a revised Infoterra mandate should take place; countries which are at present unable to make satisfactory undertakings should not be excluded from membership.

13.   It is recommended that governments should be requested to locate national focal points in units to which persons and organizations normally and habitually resort in order to obtain information, and should be advised that such units will generally be information-service activities with an environmental orientation, or national library and documentation centres. Governments should be requested to review the performance of their national focal points at regular intervals, in consultation with the Programme Activity Centre, and the Programme Activity Centre should be empowered to request such reviews, when needed.

14.   It is recommended that national focal points be encouraged to build up, or ensure access to, environmentally-related document collections, particularly of materials which are produced nationally by their own sources. The existence of key documents such as government or research report material produced nationally should be notified to the regional focal point for the information of the regional members. So far as possible, documents should be made freely available between national focal points in each region. The primary role of a national focal point is to service its own constituency, and such international commitments are assumed in order to facilitate the better fulfilment of its national role.

15. It is recommended that national focal points be encouraged to maintain closer contacts with their national sources and users. One possible means of doing this is the issue of a newsletter produced by national focal points and distibuted to source and user communities. The object is to develop and strengthen the sources' sense of identity within a family. The sense of identity of the sources can be further strengthened by inclusion in, and subsequent receipt of, a national directory of sources produced by focal points.

16. It is recommended that regional meetings of Infoterra national focal point staff should be continued at regular intervals, supplemented by occasional global meetings in order to promote and develop informal relations between the various partners, and to strengtnen the consciousness of involvement in a collective purpose.

17. It is recommended that focal points prepare a brief publishable annual review of their progress towards achievement of the Infoterra goals, and submit this to their governments and to the Programme Activity Centre.

The Programme Activity Centre

18. It is not envisaged that the Programme Activity Centre itself will develop into an information-service unit able to provide full substantive information in response to any environmental query. However, it should be able to advise national and regional focal points on the conduct of information activities, and should be able to suggest methods of information search and the likely locations of information and documents. In order to discharge this responsibility and to assist in the development of training programmes and the revision of Infoterra tools, it is recommended that the staff complement of the Programme Activity Centre include, preferably by addition, two members of staff trained as information scientists and with recent experience of service work in an environmental or similar field. Their expertise snould include familiarity with printed and on-line systems, and document location and acquisition. The Programme Activity Centre staff should collectively be fluent in English, French, Russian and Spanish.

19. It is recommended that the Programme Activity Centre be given access to a reasonable range of secondary services (abstracting and indexing journals and on-line bibliographic databases) in the environmental field, in order to be able to carry out its responsibilities under recommendation 18, above. If this cannot be done by relocating the Programme Activity Centre, then consideration should be given to strengthening the holdings of the UNEP Headquarters Library and encouraging a closer administrative and working relationship between the Programme Activity Centre and the UNEP Library.

20. Given the general shortage of personnel trained in information-handling techniques, it is recommended that basic training in such techniques be offered to focal point personnel. This training is essential for national focal points which are developing towards the provision of substantive information. Training should be structured around three themes, the first consisting of training in basic general information work, the second of training in activities peculiar to Infoterra operations (such as source registration and other Infoterra procedures) and the third covering the use of other United Nations information systems and relations with other United Nations activities in the region. This training should be made available in co-operation with UNESCO, under the aegis of the General Information Programme and in co-operation with other United Nations agencies, as appropriate and with regard to the principles of UNISIST. The emphasis should be on practice throughout. The training activity should be reinforced by the production and issue of simple practical manuals dealing with various topics in information work, with updating information distributed in or with Programme Activity Centre publications, and with occasional regional seminars for further training and exchange of experience.

21. It is recommended that the Programme Activity Centre, preferably in co-operation with the UNEP Library or other appropriate office within UNEP, should ensure that national focal points are regularly made aware of the existence of, and are given access to copies of all documents distributed by UNEP.

22. It is recommended that the Programme Activity Centre should, as part of its programme of assistance to national environmental information systems, produce occasional guides to sources of information such as listings of abstracting and indexing publications covering the environment field either wholly or sectorally, lists of relevant journals, locations of substantial document collections and so on. Some of this activity could be assisted by regional centres or national focal points against payment.

23. It is recommended that the Infoterra Bulletin continue to include professional news of regional and national focal points and staff, who should be encouraged to provide such news to the Programme Activity Centre, and to include news of new and recent developments in environmental information provision, including the availability of abstracting and indexing services, new on-line services and so on. News of forthcoming conferences and of educational opportunities may also be included. Distribution of the Bulletin by the Programme Activity Centre should be extended to include national libraries and other national collections.

System tools and elements

24. It is recommended that the Programme Activity Centre should devise firmer and more explicit criteria for source inclusion. The criteria should include not only willingness to give information (which should be certified in writing by each source and reconfirmed regularly), but also some more explicit criteria related to the quality and standing of each source. The criteria should be such as to encourage the registration of higher-level sources; and if this should result in an improvement in the general level of sources at the cost of a reduced number of sources, this should be accepted. The advice of the Evaluation Team is that quality of sources has priority over quantity, as was suggested by Infoterra II. At the time of source registration, it would be helpful to collect a longer statement from the source descriptive of its activities and for the focal point to reduce this to the brief statement included in the Directory; it should also be the role of the focal point to assign the attribute descriptors, wherever possible. It is also recommended that the information collected relating to each source, and published in the Directory, should give a list of the more important information materials at its disposal.

25. It is recommended that the list of attributes be revised and improved. No procedure for doing this is recommended at this point, but a revision should not only be directed towards establishing a clearer and more explicit listing, but should also provide an adequate structure showing synonyms and preferred (or "use") terms, broader and narrower terms, and related terms. As a first attempt, such a structural apparatus could be imposed on the existing attributes list. In the longer term, and as soon as the opportunity arises, a formal study should be mounted to revise the list of attributes, paying due regard to the work of the European Economic Community.

26. It is recommended that the Directory be published biennially, with six monthly supplements, until such time as sales under recommendation 10 provide economic justification for annual production. Specialized directories may be produced from the main file when considered necessary and as occasion offers.

27. It is recommended that the Infoterra Operations Manual be rewritten in simpler terms and up-dated, as necessary, with notices of additional developments of the system. It should contain a full description of the system and its goals and objectives. Where appropriate, full documentation of available computer programmes used in connection with the system should continue to be available.

28. It is recommended that support be made available for such expert groups as may be found necessary to assist in the planning and implementation of the recommended future activities and developments.

Links with other systems

29. It is recommended that the IOB or such other body as may be considered appropriate should review all proposals for new information systems to be developed or sponsored by the United Nations, in the light of the scope of Infoterra, in order to ensure that unnecessary duplication of effort does not take place. Similarly, existing links between United Nations information systems should be strengthened.

30. It is recommended that national focal points be strongly urged to develop and strengthen their knowledge of and operational contacts with their national information systems and other United Nations focal points located in their countries and should, where practicable, seek opportunities to co-operate with them in promotional and training activities.

31. It is recommended that Infoterra take advantage of any new information initiatives by or in connection with United Nations activities to offer its services and co-operation as appropriate.

UNITED NATIONS ENVIRONMENT PROGRAMME

INFOterra

INFOTERRA EVALUATION
FOCAL POINT QUESTIONNAIRE . . . .

This questionnaire is being sent to the persons in charge of Infoterra National Focal Points.

It is important that the whole questionnaire be answered as completely and accurately as possible. However, if any particular question is not applicable to your situation, it may be omitted. If a report or other document is available which supports the answer to any specific question, please attach a copy. You are encouraged to explain or elaborate on your answers wherever appropriate.

The completed questionnaire should be returned by air mail as soon as possible, and no later than 31 July 1980 to:-

> Infoterra Evaluation Co-ordinator,
> PGI/UNESCO
> 7 Place du Fontenoy
> 75700 Paris
> France

Organizational Matters:

1. Name the parent organization or Ministry within which your National Focal Point is now administratively situated:

2. Name the unit within this parent organization that is responsible for operation of the National Focal Point:

3. What are the principal activities in which this unit is engaged?

4. Is this unit involved in information services other than those performed as an Infoterra Focal Point?

   No ◯   Yes ◯

   If "Yes", please describe briefly.

5. Before being designated as the National Focal Point, did the parent organization have any responsibility for environmental information?

   No ◯   Yes ◯

   If "Yes", please describe briefly.

6. Does the National Focal Point exist (a) for Infoterra purposes only or (b) for Infoterra operations integrated with other operations?
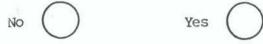
   (a) ◯   (b) ◯

7. When did your country join Infoterra? Month .... Year ....

   When did operations commence?   Month .... Year ....

   Has the administrative location of the National Focal Point changed since you
      joined Infoterra?

            No ◯   Yes ◯

8. Do you consider that the administrative location of your National Focal
      Point is such as to optimise the probability of environmental questions
      reaching you?

            No ◯   Yes ◯

9. Do you have a separate budget allocation for Infoterra purposes?

            No ◯   Yes ◯

   If "Yes", how much is this allocation for the current year? (in US Dollar
      equivalent)

                                           $.........

10. Describe briefly the relationships your National Focal Point has

    a) with your national information systems

    b) with the UNISIST Focal Points in your country

    c) with the Focal Points of any other UN information systems
        in your country

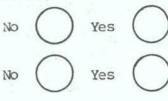   d) with other regional information systems
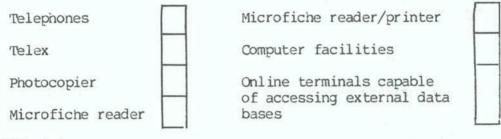

    e) with other Infoterra National Focal Points

Facilities

11. Does the National Focal Point have immediate access to:

    (a) a library of environmental documents   No ◯   Yes ◯

    (b) environmental specialists capable of   No ◯   Yes ◯
         advising you

12. Which of the following facilities does the NFP have ready access to?
    Please check each appropriate box.

    Telephones ☐   Microfiche reader/printer ☐

    Telex ☐   Computer facilities ☐

    Photocopier ☐   Online terminals capable
                           of accessing external data
    Microfiche reader ☐   bases ☐

Personnel/Training

13. Show how many people have operational involvement with National Focal Point
    activities by entering the numbers of persons in appropriate categories in
    the table below:

	Full time on NFP activities	Part time on NFP activities (estimated % of time)
Information/library specialist		
Scientist/technologist		
Clerical/administrative		

14. What are the other professional responsibilities (if any) of the
    person/persons carrying out the work of the National Focal Point?

    (a) Focal Point Manager

    (b) Staff

15. How many of the present National Focal Point staff have attended an
    Infoterra training course?

16. If members of the National Focal Point have attended such a course, can you
    suggest how Infoterra training could be improved?

17. Have you have any exchange of experience with other Natonal Focal Points through visits? If so, please describe briefly:

Promotion of Infoterra

18. Since the National Focal Point was establised, which of the following steps have been taken to inform potential users in country about Infoterra? Please check the appropriate boxes to indicate which methods have been used once and which form part of your regular promotional activities?

	Once	Occasionally	Regularly
(a) Press releases			
(b) Items in professional publications			
(c) Direct mailing of promotional material:			
(i) produced by UNEP			
(ii) produced by NFP			
(d) Presentation at meetings			
(e) Involvement in user education			
(f) Other methods (please specify):			
(g) No promotion undertaken			

*** If no promotion undertaken, go to question 22.

19. Has your promotional activity been directed at specific target groups (e.g. universities, government departments, the development community, the scientific community etc.)?

No ◯   Yes ◯

If "Yes", please describe briefly.

20. Have you carried out any international promotion of Infoterra?

No ◯   Yes ◯

If "Yes", please describe briefly.

21. Which methods of promotion have you found to be most effective?

(please attach an example of the promotional material you have found most
    effective)

22. When a user contacts you for a referral, now is he/she most likely to have
    learned of your services?

Sources

23. What metnods do you use to identify potential sources of environmental
    information?

24. What criteria do you use in selecting from these sources those for
    inclusion in the Infoterra directory?

25. Have you established a mechanism whereby you obtain updated information on
    these Sources on a regular basis?

No ◯   Yes ◯

If "Yes", how is this achieved?

26. Do you make any attempt to evaluate the performance of your sources?

No ◯   Yes ◯

If "Yes", please explain:

27. What action do you take if you discover that a Source is consistently functioning in an inadequate manner?

    (a) if it is one of your national Sources

    (b) if it is a Source in another country

28. What incentives do you use, or could you suggest, to encourage sources to participate more actively in Infoterra?

29. What efforts have you made to provide information or referral services to your Sources?

30. Do you collect information about Sources other than that required for Infoterra input?

    No $\bigcirc$ Yes $\bigcirc$

    If "Yes", please explain:

31. Do you maintain records of potential sources of environmental information in your country other than those registered with Infoterra?

    No $\bigcirc$ Yes $\bigcirc$

32. Do you produce a national Directory of sources of environmental information?

    No $\bigcirc$ Yes $\bigcirc$

Requests and request handling

33. How many requests appropriate to Infoterra have you received since you began operations as a National Focal Point?

    ....Requests

    **** If less than 3, go to question 57.

34. For how many of these requests, have you been able to give the user satisfactory lists of sources from your point of view?
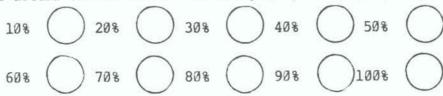
.........Satisfactory Lists

35. Please enter numbers in the appropriate boxes to indicate how many of these requests were handled by the methods below. A requestion treated in more than one way should be counted in each appropriate box.

Method	Number Handled
Direct supply of information	
Search in printed directory	
Local search of Infoterra tapes	
Referral to Nairobi or Geneva	
Referred to some other information service	
Request for search refused	

36. For the total number of questions identified in 33 (above), please indicate or estimate how many were received at the National Focal Point by each of the following methods?

Method of Receipt	Number
Received by personal visit to the NFP	
Received by telephone	
Received by telex	
Received by mail	
Received in other ways (please specify)	

37. For all questions received (as identified in 33) please estimate for what proportion the inquirer knew he/she was approaching Infoterra as such (as opposed to approaching "an agency dealing with environmental information" without actual awareness of Infoterra):

10% ( )   20% ( )   30% ( )   40% ( )   50% ( )

60% ( )   70% ( )   80% ( )   90% ( )   100% ( )

38. Please estimate how many questions you received from each of the following
    types of organisations in 1979 and indicate
whether the trend is rising, falling, or stable:

Organization Type	Number	Trend		
		Rising	Falling	Stable
Libraries in your country				
Other information centres in your country				
Any other persons or organizations in your country				
International organizations including UN agencies				
Infoterra National Focal Points in other countries				
Any other persons or organizations in other countries				

39. For all questions received in 1979 please indicate (or estimate) how these
    are categorized as to origin.

Origin	Number
Government officials or agencies	
Commerce and industry	
Academic institutions	
Research bodies other than academic	
Private citizens	

40. For the same questions please indicate or estimate how these are categorized
    as to type of question.

Type of question	Number
Information for policy making and planning (including development)	
Information in support of scientific or technological activities	
Other types. Please specify	

41. Can you estimate the average elapsed time (in days) from the time you receive a question to the time the user is provided with a referral

    (a) if you handle the question yourself   .... days

    (b) if you refer it to the Programme
         Activity Centre   .... days

42. If you receive a question that you cannot answer satisfactorily from the Infoterra directory, do you

	Always	Sometimes	Never
Answer on the basis of your own experience/knowledge			
Refer to another information centre in your country			
Refer back to user for clarification			
Refer to UNEP/Infoterra			
Refer to other NFP's			
Reject the question			
Take other action. Specify			

43. When you identify sources that might answer a question do you

	Always	Sometimes	Never
Contact the sources on behalf of the user			
Let the user contact the sources directly			

44. Do you when appropriate answer questions partly through the Infoterra sources and partly through non-Infoterra sources (including your own knowledge and experience)?

    always ◯ frequently ◯ occasionally ◯ never ◯

45. As well as referring users to Infoterra Sources, do you ever provide (on request or otherwise) further information in the form of documents or references to documents?

    always ◯ frequently ◯ occassionally ◯ never ◯

46. If you provide documents, do you (check all appropriate boxes)

    (a)   supply copies if available within the
           National Focal Point   ○

    (b)   obtain copies from elsewhere   ○

    (c)   refer users elsewhere for documents you do
           not hold   ○

47. When you refer questions to UNEP/Infoterra, is it because (check all appropriate boxes):

    (a)   a search of the printed directory is too complex   ○

    (b)   access to computer facilities at the National
           Focal Point is inadequate   ○

    (c)   the List of Attributes is inadequate to express
           the subject matter requested   ○

    (d)   you are not sure if the question is really within
           the scope. of Infoterra   ○

48. Are you safisfied with the computer services offered by Infoterra?

      No ○   Yes ○   No experience ○
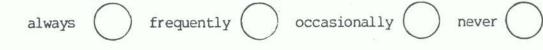
   If "No", please explain cause of dissatisfaction:

49. Does your National Focal Point use Infoterra supplied magnetic tapes for computer searching?

      No ○   Yes ○

   If yes, are you satisfied with the services and software supplied?

      No ○   Yes ○

   if "No", please explain the cause of dissatisfaction:

50. Before you attempt to answer a question do you talk or correspond with the user to clarify their information requirements?

     always ○   frequently ○   occasionally ○   never ○

51. When you have referred a user to a source, do you follow up to determine whether or not the referral has been successful?

      No ○   Yes ○

   If "Yes", in what way?

52. Do you edit the list of sources which you pass to an enquirer?

        No ◯   Yes ◯

If "Yes", please explain on what basis

53. Do users ever come back to you:

	Always	Occasionally	Frequently	Never
(a) for help in gaining access to documents				
(b) to ask you to contact sources on their behalf				
(c) to ask supplementary related questions				
(d) to ask for assistance in paying for translating or understanding materials received				
(e) to ask completely new questions				
(f) other reasons (please specify);				

54. Do you keep records of the questions you are asked?

        No ◯   Yes ◯

And of the answers which you give?

        No ◯   Yes ◯

55. What are the subject areas of your two most frequent questions?

56. How many Infoterra-related questions have your received in the last three months?

.... Questions

57. If awareness of Infoterra capabilities were fully developed in your country, please estimate the number of questions you would expect to receive in a three-month period.

.... Questions

58. If in your opinion the use of Infoterra in your country is low, what do you think is the reason?

General problems

59. Do you ever encounter problems in dealing with the Programme Activity Centre or with other National Focal Points?

Problem	No	Yes
(a) communication problems (mail, telephone, etc.)		
(b) administrative problems		
(c) language problems		
(d) other types (specify)?		

Please explain any major problems encountered

60. For each of the following activities please indicate the degree of difficulty encountered in carrying it out:

Activity	Great Difficulty	Some Difficulty	No Difficulty
(a) identifying relevent Sources			
(b) getting the cooperation of these Sources			
(c) answering user questions			
(d) promoting use within the country			
(e) securing adequate financial support for the National Focal Point			
(f) conforming to Infoterra guidelines, requirements, or reporting procedures			
(g) other (please identify)			

61. For which of the following purposes do you use the Infoterra Directory?

Possible Use of Directory	Used	Not Used
(a) responding to internal referral requests		
(b) responding to external referral requests		
(c) supplementing source lists for environmental information		
(d) cataloguing national information resources		
(e) as a basis for a national environmental information system		
(f) as an environmental management tool		
(g) other (please specify)		

62. Listed below are some possible changes that might be made to the Directory of Sources or to its distribution. Please indicate the importance to you of each possible change, bearing in mind that some of these could place additional requirements and responsibilities on National Focal Points.

Possible Change	Essential	Desirable	Unimportant	No opinion
(a) Improved coverage of sources in other countries				
(b) Greater specificity in the List of Attributes				
(c) Improved structure within the List of Attributes				
(d) A completely different method of indexing adopted				
(e) Ability to coordinate attributes (e.g. Fish AND Mercury) to improve precision				
(f) Extending the coverage to include other topics of environmental interest				
(g) Wider distribution of the Directory to information centres in your country				
(h) Inclusion of more information on collections of environment- related documents				
(i) Inclusion of more information on indexing/abstracting services				
(j) Other change. Specify:				

Impact of Infoterra

63. What, in your opinion, are the most important objectives of the Infoterra programme?

    (a) in your country

    (b) internationally.

64. Do you consider that the participation of your country in Infoterra has led to a greater appreciation of environmental factors or of the need for environmental information?

	Yes	No
(a) among policy makers		
(b) in industry		
(c) in the scientific community		
(d) in educational institutions		
(e) in the information community		
(f) among the general public		

65. Has the establishment of an Infoterra National Focal Point led to other developments in the provision of environmental information in your country?
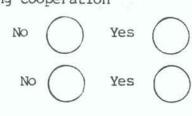
    No ◯   Yes ◯

    If "Yes", please explain:

66. Has your participation in Infoterra improved your national awareness of and access to environmentally related information in other countries?

    No ◯   Yes ◯

    If "No", can you suggest how the UNEP Infoterra programme could be modified to provide increased awareness/access?

67. Since your participation in Infoterra began, is there any evidence of:

    (a) increased demand for environmental   No   ◯   Yes   ◯
        information within your country

    (b) increased demand from other countries   No   ◯   Yes   ◯
        for environmental information from your
        country?

68. Has the Infoterra programme had any effect in improving cooperation

    (a) among organizations concerned with   No   ◯   Yes   ◯
        environmental information in your country

    (b) between organizations in your country and   No   ◯   Yes   ◯
        those of other countries?

    If the answer to either is "Yes", please explain.

69. Do you consider that the benifits of participation in Infoterra outweigh
    the costs of national involvement in the programme?

          No   ◯   Yes   ◯

70. Has your participation in Infoterra had any effect in stimulating
    interest/activity in the establishment of other information services (in
    other scientific/technical fields) within your country?

          No   ◯   Yes   ◯

    If "Yes", please explain:

71. Since January 1979, approximately how many general inquiries about
    Infoterra or UNEP and the activities of these programmes have you received?

    .... Inquiries.

    How did you deal with these inquiries (if any)?

Future Activities

72. Listed below are some possible development tnat might be promoted by the Infoterra Network in the future. Please indicate by checking the appropriate box in the right-hand columns the importance of each development to the improvement of access to and use of environmental information in your country, bearing in mind that implementation of some suggestions, would place additional requirements and responsibilities on National Focal Points.

Possible Activity	Essential	Desirable	Unimportant	No opinion
(a) Establishment of a document collection and delivery system				
(b) Assisting users in obtaining needed documents				
(c) Assisting users in paying charges required by Sources				
(d) Procedures to assist in obtaining translations				
(e) Marketing subsets of the Infoterra directory on particular topics				
(f) Publishing listings of opportunities for education and training in the environmental field				
(g) Creating an international environmental database of bibliographic records				
(h) Creating a database of international environmental data				
(i) Provision of more general training in information handling for NFP's				
(j) On line access to Infoterra as an additional option				
(k) Establishment of Information Analysis Centres				
(l) Other (please specify):				

73. Please comment below on any aspects or problems of your involvement with Infoterra which have not been covered in this questionnaire.

74. Finally, would you please attach to the completed questionnaire

   (a) a copy of the last two questions you have answered through Infoterra resources and,

   (b) the responses you supplied to these questions.

The information below is requested for statistical purposes only and will not be used in the final evaluation of Infoterra

Name of person completing questionnaire ....

Title or position ....

Organization ....

Country ....

Thank you for your cooperation.

UNITED NATIONS ENVIRONMENT PROGRAMME

INFOterra

. . . .

INFOTERRA EVALUATION

USER QUESTIONNAIRE

This questionnaire is being sent to a sample of people known to have made use of Infoterra in search of environmental information. (Infoterra was formerly known as the International Referral System of the United Nations Environment Programme, and is currently the subject of an evaluation exercise sponsored by UNEP). It is important that all questions appropriate to you are answered. You are invited to explain or elaborate on your answers wherever appropriate.

The completed questionnaire should be returned by air mail as soon as possible to:

> Mr. John Martyn
> Aslib R & D Department
> 36 Bedford Row
> London WC1R 4JH
> United Kingdom

1. If you had heard of the Infoterra/IRS service, before receiving this questionnaire how did you find out about it?

2. How many times have you approached Infoterra for referral to a source or sources of environmental information?

.... Times

On the last occasion you asked a question which was answered by Infoterra.

3. Where did you submit your question?

4. To how many sources of information did Infoterra refer you?

.... Sources

5. How many of these sources did you approach for information?

.... Sources

6. Were any of the sources contacted outside your own country?

No ◯   Yes ◯

If "Yes", please indicate which countries

7. Did you feel that the Infoterra sources records provided a sufficient picture of the capabilities/expertise of a source to enable you to decide whom to approach?

No ◯   Yes ◯

If "No", what other information about the source would have helped you?

8. Did any source which you approached for information require payment?

No ◯   Yes ◯

9. In what form was information provided to you by the sources you approached?

	Source 1	Source 2	Source 3	Source 4
(a) advice				
(b) references to publications				
(c) copies of publications				
(d) other (please specify)				
(e) information not available				
(f) no response				

10. Did the Infoterra referral centre itself provide substantive information as well as referring you to further information sources?

No ◯   Yes ◯

If "yes", in what form was this supplementary information provid ed

11. Did the Infoterra referral centre

(a) provide advice on which of the referred sources to approach?

No ◯   Yes ◯

(b) approach any sources on your behalf?

No ◯   Yes ◯

12. Did you return to the Infoterra referral centre in connection with your question, to seek further help, in contacting sources, interpreting information received or for any other reasons?

No ◯   Yes ◯

If "Yes", please specify

13. Would you judge the information supplied to you by source(s) to be

	Source 1	Source 2	Source 3	Source 4
(a) extremely useful				
(b) useful				
(c) of slight use				
(d) of no use				

Please explain why the information provided was or was not of use to you.

14. How long did it take

    (a) to get tne list of sources to which you could refer   ..... days

    (b) to get substantive information   ..... days

15. What effect did delays in obtaining information through Infoterra procedures have on the utility of the information provided?

    (a)   delay substantially reduced utility

    (b)   delay slightly reduced utility

    (c)   no effect

16. Were you seeking information

    (a)   for input to a research or scientific activity

    (b)   for planning or policy formulation

    (c)   for educational purposes

    (d)   for operational development

    (e)   for industrial or commercial uses

    (f)   for public information purposes

    (g)   for general information

17. Was the question you asked

    (a)   in your own field of environmental expertise

    (b)   or in another field?

18. Having been referred to a Source at any time by Infoterra, have you on another occasion used the same Source without further contact with the Infoterra referral centre?

    No   ⃝   Yes   ⃝

19. Will you use Infoterra again, if appropriate?

    No   ⃝   Yes   ⃝

20. If you would like to make any comments or proposals for the improvement of services provided by Infoterra, please do so below.

21. If you have a record of the last request you put to a Source
    and the response delivered by that Source, it would be of
    great help to the evaluation if you could provide us with
    copies.

    THANK YOU FOR YOUR CO-OPERATION

UNITED NATIONS ENVIRONMENT
PROGRAMME

INFOterra

. . . .

INFOTERRA EVALUATION

SOURCE QUESTIONNAIRE

This questionnaire is being sent to a sample of organizations/
individuals which have agreed to be included in the Infoterra
Directory as sources of environmental information. (Infoterra
was formerly known as the International Referral System of the
United Nations Environment Programme, and is currently the
subject of an evaluative exercise sponsored by UNEP). It is
important that all questions appropriate to you are answered.
You are invited to explain or elaborate on your answers wherever
appropriate.

The completed questionnaire should be returned by air mail as soon
as possible to:

> Mr. John Martyn
> Aslib R & D Department
> 36 Bedford Row
> London WC1R 4JH
> United Kingdom

1. Before you received this questionnaire were you aware that you were listed as an Infoterra Source?

No ◯   Yes ◯

If "No", go to question 13

2. How long have you been an Infoterra/IRS Source?   ..... Years

3. During that time, how many requests for information have you received which you knew to be the result of an Infoterra referral. (If no requests have been received, please enter NIL and skip to question 13).

............Requests

4. What proportion of the requests for information that you receive can you identify as being the result of an Infoterra referral?

5. Of the requests for information which you have received as the result of an Infoterra referral, how many came from

(a) within your country   ◯

(b) from outside your country   ◯
    (please list the countries involved)

6. For the last request you received, please give an estimate of the effort expended in dealing with it.

.... manhours   .... cost (in US dollars
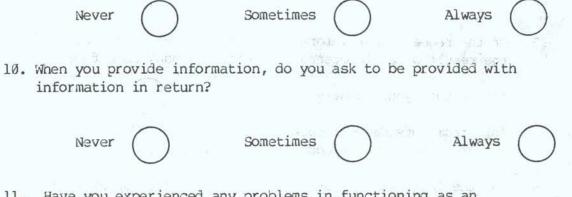   equivalent) other than labour

7. For how many of these requests did you provide information?

.............Requests

8. In answering such requests do you

(a) provide advice based on personal experience	
(b) provide references to documents	
(c) provide documents	
(d) give a combination of advice and references/ publications	
(e) provide analysed information tailored by you to the requirements of the user	
(f) other (please specify)	

9. Do you make a charge for providing information in response to Infoterra requests?

Never ◯   Sometimes ◯   Always ◯

10. When you provide information, do you ask to be provided with information in return?

Never ◯   Sometimes ◯   Always ◯

11. Have you experienced any problems in functioning as an Infoterra Source?

No ◯   Yes ◯

If "Yes" please specify

12. It would be of great assistance to the evaluation if you could enclose a copy of the last Infoterra request you dealt with, together with your response to this request. Identification of the requester may be omitted.

   Please add your source number for reference purposes

13. Have you ever approached Infoterra to obtain environmentally related information on your own behalf?

   No ◯   Yes ◯

   If "Yes" were you satisfied with the results?

   No ◯   Yes ◯

14. Do you consider it likely you will use Infoterra in the future?

   No ◯   Yes ◯

15. Have you ever approached Infoterra to obtain environmentally-related information on behalf of someone else?

   No ◯   Yes ◯

16. If you would like to add any comments or suggestions about Infoterra, please do so below.

THANK YOU FOR YOUR CO-OPERATION.

UNITED NATIONS ENVIRONMENT PROGRAMME

INFOterra

INFOTERRA EVALUATION
INTERNATIONAL ORGANIZATION QUESTIONNAIRE

. . . .

This questionnaire is being sent to contact persons for Infoterra in international organizations.

It is important that the whole questionnaire be answered as completely as possible. However, if any particular question is not applicable to your situation, it may be omitted. If any report or other document is available which supports the answer to any specific question, please attach a copy. You are encouraged to explain or elaborate on answers where appropriate.

The completed questionnaire should be returned, no later than 31 July 1980, to:-

> Mr. John Martyn
> Aslib R&D Department
> 36, Bedford Row
> London WC1R 4JH
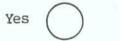> United Kingdom.

INFOTERRA FOCAL POINTS IN AGENCIES

1. How many sources within your agency are registered in the Infoterra Directory?

2. How many enquiries, on average, has each source received as a result of Infoterra referral within the last six months?

3. Do you think the number of sources listed within your agency could be usefully increased ◯ or reduced ◯ or kept as it is ◯

4. Do you as an Environmental Agency, receive enquiries on environmental topics, from outside your organisation, which are not within your field of compotence?

    Yes ◯   No ◯

5. If so, do you normally pass to to Infoterra (UNEP)

    Yes ◯   No ◯

    or to other agencies within the UN family

    Yes ◯   No ◯

6. Since beng designated as an Infoterra Focal Point, how many enquiries have you

    (a) answered by use of the Infoterra Directory of Sources ◯

    (b) referred to UNEP ◯

7. How many of these enquiries originated from within your own organisation?

8. If you have referred enquiries to UNEP, what sort of response
    have you received

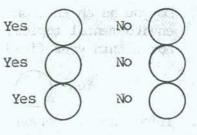   referral list ◯   substantive information ◯

9. In general, do you consider the results of using Infoterra to
    have been successful in meeting your needs for information

            Yes ◯   Partly ◯   No ◯

10. Where in your organisation is the Infoterra Directory of Sources
    kept?

11. Does anyone other than yourself, to your knowledge, make use of
    the Directory?

            Yes ◯   No ◯

12. Is the Directory used within your agency as a list of organisations
    which could be of use to you

    (a) in mailing publicity   Yes ◯   No ◯

    (b) in information gathering (surveys etc)   Yes ◯   No ◯
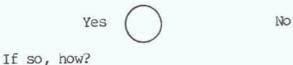
    (c) in building up information networks   Yes ◯   No ◯

13. Do you see Infoterra as a useful tool for your own community
    of information users?

            Yes ◯   No ◯

    If not, why not?

14. Do you feel that your agency could with benefit make more use of
    Infoterra than it does at present?

            Yes ◯   No ◯
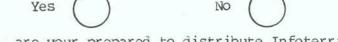
15. Do you intend to make more use of Infoterra in the future?

            Yes ◯   No ◯

    If so, how?

16. Please describe briefly the steps you have taken to publicise Infoterra within you own agency

17. Has information on Infoterra ever been included in publicity material produced by your agency?

Yes ◯   No ◯

If so, please attach examples

18. Have you taken any steps yourself to ensure that your contacts in member states are aware of Infoterra facilities?

Yes ◯   No ◯

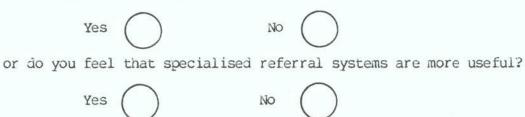19. If not, are your prepared to distribute Infoterra publicity to or through your member state contacts?

Yes ◯   No ◯

20. Do you believe that referral services are valuable tools?

Yes ◯   No ◯

21. Does you Agency have, or intend to set up, any sort of Referral System?

Yes ◯   No ◯

If so, please specify

22. Do you believe that the number of referral systems sponsored by the U.N. should be limited, and therefore that each should be fairly general in scope

Yes ◯   No ◯

or do you feel that specialised referral systems are more useful?

Yes ◯   No ◯

23. Have you ever made any form of deliberate test of Infoterra facilities?

Yes ◯   No ◯

If so, what was the result?

24. Do you have any comments or suggestions about Infoterra and its future development?

THANK YOU FOR YOUR CO-OPERATION.

APPENDIX F

UNITED NATIONS
ENVIRONMENT PROGRAMME

INTERNATIONAL REFERRAL SYSTEM FOR SOURCES OF ENVIRONMENTAL INFORMATION

INPUT FORM FOR REGISTRATION OF SOURCE

(INTERNATIONAL VERSION)

Please return the completed form to:

Complete one form for each functional unit which has information or knowledge on a particular environmental topic or closely related range of topics (one coherent body of environmental information or expertise).

FOR USE BY FOCAL POINT

000	Accession Number				F.P.Code				P.O.Code					Source Code		

Action Code	Year	Month	Day	Output Checked

ACTION CODES

1. Original Input or Modification.
2. Deletion from Directory.
3. Transfer to International Directory.
4. Re-activate "deleted" record.

EP/RS/F-S (Rev.2-77)

I NAMES AND ADDRESSES

Name and Address of person completing this form (will not be included in directory)

Name_____

Name of organisation_____

Office Address_____

City_____ State _____

Post/ZIP/PIN Code_____ Country _____

Telephone_____ Telex_____ Cable _____

---

100 Name and Address of Information Source

Responsible Officer (100) 1/_____

Name of Organisation (101)_____

Office Address (102)_____

City (103)_____ State (104)_____

Post /ZIP/PIN Code (105)_____ Country (106)_____

Telephone (107)_____ Telex (108)_____ Cable (109)____

---

110 Name and Address of Parent Organisation   (where applicable See note Field 312)

Name Organisation (111)_____

Office Address (112)_____

City (113)_____ State (114)_____

Post/ZIP/PIN Code (115)_____ Country (116)_____

Telephone (117)_____ Telex (118)_____ Cable (119)____

---

120 Name and Address to which NATIONAL user should be referred
(if different from 100 above)

Responsible Officer (120) 1/_____

Name of Organisation (121)_____

Office Address (122)_____

City (123)_____ State (124)_____

Post/ZIP/PIN Code (125)_____ Country (126)_____

Telephone (127)_____ Telex (128)_____ Cable (129)____

---

130 Name and address to which INTERNATIONAL
queries should be addressed (if different from 100 or 120 above)

Responsible Officer (130) 1/_____

Name of Organisation (131)_____

Office Address (132)_____

City (133)_____ State (134)_____

Post/ZIP/PIN Code (135)_____ Country (136)_____

Telephone (137)_____ Telex (138)_____ Cable (139)____

1/   A Position Title is generally preferable to a personal name.

II   DESCRIPTION OF INFORMATION SOURCE

| 205 | Please describe the general field of activity and information capabilities of the information source. Please see note in Section VII which suggests that it is preferable to complete this entry after the remainder of the form has been completed. Note: This field is restricted to 300 characters in length. |

| CHECK IF TRANSLATIONS OF ABOVE ATTACHED IN | | French | | Russian | | Spanish | |

III CODED ORGANISATIONAL ATTRIBUTES

| 311 | SPONSORSHIP | Please tick box(es) as appropriate

CONTROL/FUNDING ORGANISATION OF INFORMATION SOURCE

A) HAS SIGNIFICANCE FOR AN AREA OR COMMUNITY WHICH IS:

110 ☐ GLOBAL   150 ☐ LOCAL/MUNICIPAL
120 ☐ REGIONAL (INTERNATIONAL)   170 ☐ REGIONAL WITHIN A COUNTR'
130 ☐ NATIONAL

B) AND IS BEST DESCRIBED AS:

210 ☐ UNITED NATIONS   330 ☐ INDUSTRIAL/COMMERCIAL
220 ☐ INTERGOVERMENTAL   350 ☐ PRIVATE (NOT FOR PROFIT)
230 ☐ GOVERNMENTAL   370 ☐ PROFESSIONAL
240 ☐ NON-GOVERNMENTAL   380 ☐ EDUCATIONAL
310 ☐ RELIGIOUS/PHILOSOPHIC   800 ☐ MIXED CONTROL/FUNDING
320 ☐ POLITICAL   PRIMARILY AS SPECIFIED

| 312 | PARENT ORGANIZATION |

PRIMARY ORGANISATIONAL PURPOSE OF PARENT BODY   Please tick up to 5 box(es) as apporpriate.

The Parent Body is normally that organization which supplies direction and control
for the unit which acts as the information source. In government the Parent Body
is never above the ministry level.
(If the Information Source is autonomous, please relate these attributes to the source itself)

110 ☐ POLICY FORMULATION   410 ☐ RESEARCH
120 ☐ MANAGEMENT   420 ☐ MONITORING/MEASUREMENT
130 ☐ PLANNING   430 ☐ FORECASTING
210 ☐ PROTECTION/CONSERVATION   440 ☐ ASSESSMENT/EVALUATION
220 ☐ EXPLOITATION/DEVELOPMENT   450 ☐ LEGISLATION/REGULATION
        OF RESOURCES   455 ☐ LAW/REGULATION ENFORCEMEN
230 ☐ PRODUCTION   460 ☐ EDUCATION
240 ☐ MARKETING/DISTRIBUTION   470 ☐ TRANSFER OF TECHNOLOGY
250 ☐ PROVISION OF SERVICES   480 ☐ PROVISION OF INFORMATION
310 ☐ SUPPORT/PROGRAMME BUDGETING   490 ☐ CONSULTATION
330 ☐ TECHNICAL ASSISTANCE/TRAINING 500 ☐ TECHNICAL DEVELOPMENT
340 ☐ CAPITAL DEVELOPMENT   510 ☐ COMMUNITY ACTIVITIES
350 ☐ DEVELOPMENT ASSISTANCE   / SERVICES

| 313 | FUNCTION OF INFORMATION SOURCE: |

Please tick up to 10 box(es) as apporpriate.

THE UNIT WHICH FUNCTIONS AS AN INFORMATION SOURCE IS BEST DESCRIBED AS A:

120 ☐ POLICY UNIT
130 ☐ LEGISLATIVE UNIT
140 ☐ MANAGEMENT UNIT
145 ☐ COORDINATION UNIT
150 ☐ REPRESENTATIVE OR NEGOTIATING UNIT
160 ☐ FINANCIAL ALLOCATION UNIT
170 ☐ FINANCIAL ASSISTANCE UNIT
180 ☐ DEVELOPMENT ASSISTANCE UNIT
190 ☐ TECHNICAL ASSISTANCE UNIT
200 ☐ ENVIRONMENTAL UNIT
210 ☐ RESEARCH UNIT
220 ☐ LABORATORY
230 ☐ OPERATIONAL UNIT
240 ☐ PRODUCTION UNIT
250 ☐ MARKETING AND DISTRIBUTION UNIT
255 ☐ TECHNOLOGY DEVELOPMENT/TRANSFER UNIT
260 ☐ ADVERTISING UNIT
270 ☐ FIELD CENTRE
280 ☐ HEALTH CENTRE OR HOSPITAL
290 ☐ REMOTE SENSING FACILITY
300 ☐ WEATHER STATION
310 ☐ MONITORING ASSESSMENT CENTRE
320 ☐ MONITORING STATION
330 ☐ EARLY WARNING/DISASTER
     PREDICTION UNIT
340 ☐ EMERGENCY PREPAREDNESS UNIT
350 ☐ COMMUNICATIONS NETWORK/UNIT
360 ☐ DATA CENTRE/UNIT
370 ☐ STATISTICAL UNIT
380 ☐ DATA ASSESSMENT CENTRE
390 ☐ REFERRAL OR DIRECTORY SERVICE
400 ☐ INDEXING/ABSTRACTING SERVICE
410 ☐ COMPUTERIZED BIBLIOGRAPHIC SERVICE
420 ☐ LIBRARY
425 ☐ DOCUMENTATION CENTRE
426 ☐ TRANSLATION SERVICE
430 ☐ PATENT OFFICE/UNIT
440 ☐ ENQUIRY CENTRE
450 ☐ INFORMATION ANALYSIS CENTRE

455 ☐ FORECASTING UNIT
460 ☐ MODELLING OR SIMULATION UNIT
470 ☐ MUSEUM
480 ☐ SEED OR SPERM BANK
490 ☐ CULTURE COLLECTION UNIT
500 ☐ GENE POOL
510 ☐ BOTANIC GARDEN
520 ☐ ZOO
530 ☐ INVENTORY OR REGISTER UNIT
540 ☐ CARTOGRAPHICAL UNIT
550 ☐ WORKING PARTY/COMMISSION/
     STANDING COMMITTEE
570 ☐ TRIBUNAL
580 ☐ STANDARDS / SPECIFICATIONS
     UNIT
590 ☐ ADVISORY SERVICE
600 ☐ OMBUDSMAN
610 ☐ INSPECTORATE / REGULATING
     UNIT
620 ☐ LAW ENFORCEMENT UNIT
630 ☐ SCHOOL
650 ☐ TRAINING CENTRE
660 ☐ HIGHER EDUCATION UNIT
670 ☐ ADULT EDUCATION UNIT
680 ☐ SOCIO-ECONOMIC UNIT
690 ☐ CONSULTANCY SERVICE
710 ☐ MANAGEMENT STUDIES UNIT
720 ☐ ACADEMIC OR LEARNED SOCIETY
730 ☐ EMPLOYERS' ASSOCIATION
760 ☐ CONTRACTOR
770 ☐ TRADES UNION
780 ☐ PUBLISHING UNIT
785 ☐ PUBLIC INFORMATION/MEDIA
     UNIT
790 ☐ CITIZEN ACTION GROUP
800 ☐ PUBLIC/SOCIAL SERVICE UNIT
810 ☐ INDIVIDUAL EXPERT
830 ☐ INDUSTRIAL TRADE/
     PROFESSIONAL ASSOCIATION

IV   GEOGRAPHICAL COVERAGE AND WORKING LANGUAGE OF SOURCE

414	Name the geographical, developmental or ecological area(s) primarily covered.	415	Working Language(s) of Information Source

CODING BY FOCAL POINT									

V   CODED INFORMATIONAL ATTRIBUTES OF INFORMATION SOURCE

516	AVAILABILITY

Please tick up to 10 box(es) as apporpriate.

THE FOLLOWING TERMS AND CONDITIONS NORMALLY APPLY WHEN SUPPLYING INFORMATION AND/OR DATA:

110 ☐ NO RESTRICTION

120 ☐ NEGOTIATION

140 ☐ NORMALLY WITHOUT CHARGE

150 ☐ AS RESOURCES PERMIT

160 ☐ ON AN EXCHANGE BASIS

170 ☐ FIXED SCHEDULE OF CHARGES

175 ☐ AD HOC PAYMENT

180 ☐ PAYMENT OF ROYALTIES

190 ☐ HANDLING CHARGES ONLY

200 ☐ TIME-USE RESTRICTIONS

210 ☐ PUBLICATION RESTRICTIONS

517	OUTPUT

Please tick up to 10 box(es) as apporpriate.

THE INFORMATION SOURCE OFFERS TO PROVIDE:

010 ☐ UNPROCESSED DATA

020 ☐ PROCESSED/ANALYSED DATA

030 ☐ BIBLOGRAPHIC AND OTHER REFERENCES

040 ☐ ABSTRACTS

050 ☐ PUBLICATIONS OR REPORTS

060 ☐ EXTRACTS FROM PUBLICATIONS OR REPORTS

070 ☐ SPECIAL USE-ORIENTED REPORTS

080 ☐ POPULAR PUBLICATIONS

090 ☐ EXPERT ASSISTANCE OR ADVICE

WHICH TAKES THE FOLLOWING FORMS:

120 ☐ FORMATTED

200 ☐ AUDIO-VISUAL

210 ☐ ORAL

300 ☐ TYPED

310 ☐ PRINTED

320 ☐ GRAPHIC MATERIAL (Include maps and charts)

330 ☐ COMPUTER PRINT-OUT

410 ☐ MACHINE-READABLE

420 ☐ ON-LINE

500 ☐ REDUCED (MICROFORM)

510 ☐ COPIED

520 ☐ TELE-FACSIMILE

VI   CODED SUBJECT ATTRIBUTES

Please choose from the list of subject attributes in the IRS Manual those which best describe the information source. Enter their codes below.(International codes are 4-digit. Extra positions are allowed for Focal Point attribute subdivisions.)

618	Most relevant attributes

619	Other associated attributes

VII ADDITIONAL ATTRIBUTES

1. <u>Section II</u> (Field 205) of the form can now be completed. Please include there any important aspects of your information source which are not adequately described by the attributes selected in Sections III, IV, V and VI.

2. Section VII is for your use if you belive that inadequacies in the attribute list could seriously impair computer indentification of your source in response to a query. If so, please suggest additional descriptors to correct this deficiency, giving definitions, and closely related attributes you have found. Your IRS Focal Point will review your suggestions.

720	Additional Attributes

FOR FOCAL POINT USE: If source registrations are submitted to UNEP/IRS in card-image format or other automated format, Focal Points should make this field tne subject of separate correspondence.

VIII SUPPORTING DOCUMENTATION

Please list some representative documents relating to the information source, and indicate those documents that you are forwarding to your Focal Point with this form. (If you have suggested additional attributes in Section VII above,please mention any thesaurus or classification system you have used in deriving them).

821	Title	Is The Document attached?

If you require further space for Section VII or VIII please write your additional information on a plain sheet of paper and attach to the form.