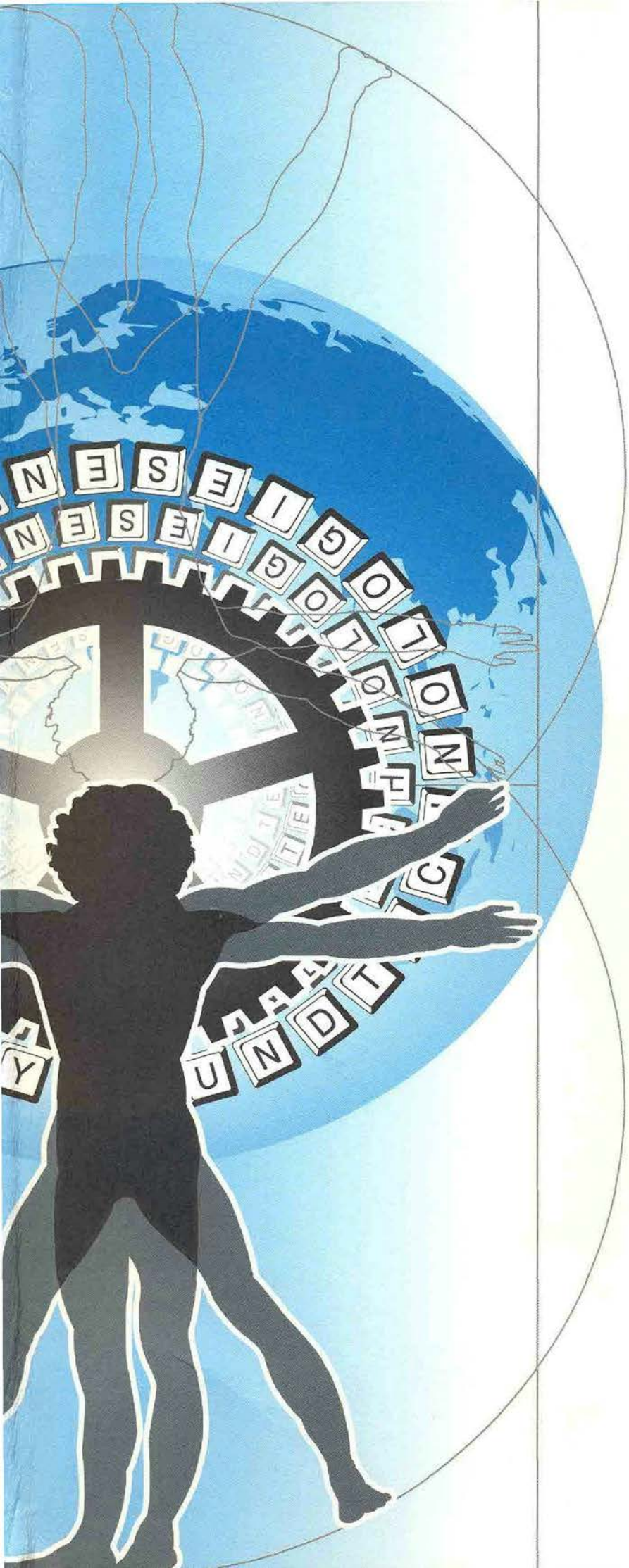

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UNEP SURVEY OF INFORMATION SYSTEMS RELATED TO ENVIRONMENTALLY SOUND TECHNOLOGIES

Contribution to the 1997
Session of the Commission on
Sustainable Development

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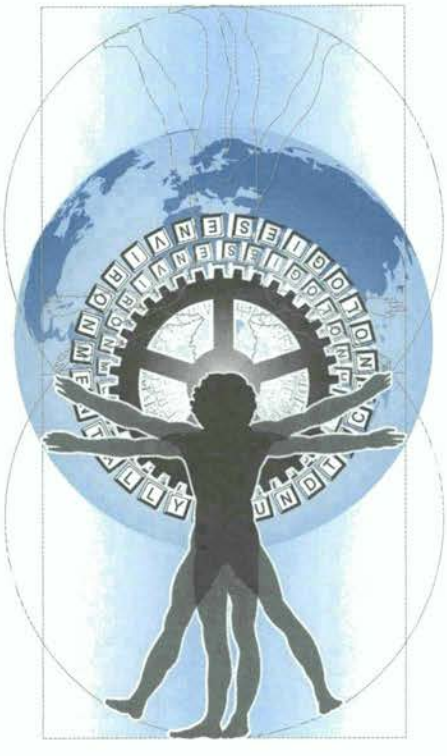
- Industry and Environment Office
- International Environmental Technology Centre
- INFOTERRA

April 1997

IE IETC INFOTERRA



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This Survey is also available as electronic document within the Searchable EST Directory linked to UNEP IETC's homepage in the Internet (http://www.unep.or.jp/). Entries are frequently updated and added through our PC tool called maESTro. If you want to share your technology related information within a worldwide operating network, please feel free to ask UNEP IETC for your personal maESTro user kit (Email: *maestro@unep.or.jp*).

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The cover design of this report is based on the notion of
"Technology" - evolving through time from the Renaissance to the Industrial Revolution, on to the Information Age.
"Humanity" - our knowledge and innovations.
"Globe" - the finite Earth.
"Network" - linking all four corners of the World.
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CONTENTS

Preface

The advent of the information society has been heralded as an opportunity for the creation of greater symbiosis between humanity and the natural world. It is predicted that there will be a shift from an emphasis on the provision of goods and services to an emphasis on information, technology and knowledge. This would be accompanied by a move from mass consumption to mass knowledge creation with information networks and databases playing a key role in environmentally sound decision making for all sectors of society.

Some of these changes can already be seen. The advent of the World Wide Web (WWW) is just one example and, as thousands of servers and millions of users come on-line, the way that information shapes global human knowledge and action is changing dramatically. At the same time, however, a large proportion of the world's decision-makerss, particularly those in countries with growing economies, do not have access to these information sources. This is why it is important to develop a range of information collection/delivery mechanisms and to disseminate them to decision-makers.

The role that organizations such as the United Nations Environment Programme (UNEP), can play has been set out at numerous high level international meetings, and more specifically, in Agenda 21. UNEP's mandate is to catalyze the establishment of partnerships and networks for the worldwide dissemination of comprehensive, reliable and easily accessible information on environmentally sound technologies (ESTs) and practices, particularly cleaner technologies. It is in this context that UNEP has prepared this first survey, hoping that it will also encourage further information sharing by other organizations, particularly in the field of indigenous technologies .

The relationship between ESTs and their promotion is at the heart of the UNEP survey presented in this report. Faced with limited global resources, an increase in the world's population, and the need to protect the eco-systems that sustain the world's productive capacity, the importance of achieving sustainable forms of development is inescapable. Resource efficient and cost-effective technologies are crucial in the quest for sustainable development. UNEP hopes that this survey will help decision-makerss in government, municipalities and industry to address and solve the problems of air and water pollution as well as waste management, that they face.

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Executive Summary

BACKGROUND

This report is submitted to the fifth session of the Commission on Sustainable Development (CSD) to meet the critical need for a comprehensive inventory of the current state of information sources related to environmentally sound technologies (ESTs). It presents the results of an extensive Survey of Information Systems Related to Environmentally Sound Technologies carried out by UNEP over the past two years. This report extends and builds upon two previous reports on this subject submitted by UNEP to the CSD in 1995 and 1996. The goal of this effort is to identify and characterize existing and planned EST information systems and sources. The report identifies 84 such information systems and characterizes them with respect to the technologies covered, information provided, and the cost and availability of such information.

UNEP decided to launch this initiative for three reasons. First, there is international recognition of the need for enhanced information collection and dissemination related to ESTs. Second, UNEP has an unique catalyst role in this area and considerable experience with the development of information systems and clearinghouses. Third, it represents an opportunity for inter-agency coordination and action as well as public/private partnership (a priority of the CSD).

At its 1995 and 1996 sessions, the CSD welcomed this initiative and encouraged UNEP to continue to work in cooperation with other UN bodies and relevant organizations including the United Nations Framework Convention on Climate Change and other relevant Convention Secretariats. At its 1996 session, the CSD encouraged UNEP to develop an EST information network as a "consultative mechanism" to enhance cooperation and compatibility between existing and planned information systems and clearinghouse functions. In direct response to this request, UNEP has established the Environmentally Sound Technology Information Network Programme in order to facilitate greater communication and exchange of information among providers and users of EST information. This report also discusses the progress and plans for this programme.

SURVEY OF EST INFORMATION SYSTEMS

The UNEP survey, carried out both by mail and through Internet searches, included over 400 institutions and received over 160 responses. From this, UNEP identified 84 information systems that contain information related to environmentally sound technology. Of this number there are:

- 34 information systems which contain substantial information on ESTs,
- 15 information systems that deal with environmental issues but are not predominantly technology oriented,
- 35 systems which may contain EST information but the extent and nature has not been verified.

Fourteen of these systems are located in developing countries. This report provides a catalogue of all 84 EST

Box A: Survey Findings

- A large number of the information systems (75 percent) are on-line through the Internet or otherwise. This represents a significant increase since the April 1995 report and is evidence of the increasing trend towards use of this information dissemination method.
- Over 50 percent of the systems disseminate information in hard copy printed form. This dissemination method remains very important to those who do not have access to on-line services especially in developing countries. Query response services (by phone, fax or mail) are also important to such users and 21 percent of the systems use this method.
- Eighty-two percent of the systems do not restrict access to information and would provide information to virtually anyone. More than half of the systems charge either through subscription, purchase or usage charge.
- Most systems (81 out of 84) contain information in English, although 23 systems contain information in other languages.

information systems and characterizes them in terms of:

- technologies covered, (e.g. pollution control, cleaner production, greenhouse gas reduction, alternatives to ozone depleting substances, energy conservation and renewable energy, etc),
- geographic coverage and language,
- media used for information dissemination (eg. hard copy, diskette, on-line, etc.), and
- availability of the information to the public and the costs of information access and use.

(Significant findings are shown in Box A.)

The survey also identified 127 institutions involved in various aspects of EST related activity, and these have been characterized and catalogued in this report. These include institutions that market and provide links to various EST databases, EST export related organizations, international organizations with EST related programmes, research institutions and environmental technology centres. Many represent potential partners and participants in the UNEP EST Information Network Programme and electronic links are currently being created from the homepages of UNEP IE and UNEP IETC to the web sites of many of these institutions.

UNEP considers that a regularly updated survey, with free access to the catalogue of databases, would in itself be a very useful service for those seeking information on ESTs. Consequently, UNEP intends to continue updating the

survey in collaboration with other partners as part of the EST Information Network Programme. Particular emphasis would be placed on identification of EST information systems in Latin America and in Francophone countries as coverage of these areas remains low in the present survey.

In addition to the survey, UNEP carried out in-depth case studies of selected EST information systems in order to evaluate system performance in terms of information contained and the quality, accessibility and cost of the systems (see Box B).

On October 9-11, 1995 UNEP held an Expert Meeting in Paris that was designed to evaluate:

1. existing and planned systems for providing information on environmentally sound technologies from the perspective of coverage, quality of information, cost and accessibility;
2. needs and requirements of potential users of such information, especially users from developing countries and

Box B: Case Studies

(1) ICPIC: International Cleaner Production Information Clearinghouse,

(2) OAIC: Ozone-Action Information Clearinghouse at the UNEP Industry and Environment Office in Paris,

(3) AGRIS and CARIS: Agricultural Sciences and Technology Information System and the Current Agricultural Research Information System of the Food and Agriculture Organization (FAO),

(4) ISAT: Information and Advisory Service on Appropriate Technology of the German Agency for Technological Cooperation (GTZ),

(5) JOIS: JICST On-Line Information System of the Japan Information Centre for Science and Technology (JICST),

(6) ICPCT: Indian Centre for Promotion of Cleaner Production Technology of the National Environmental Engineering Research Institute (NEERI),

(7) EREC and EREN: Energy Efficiency and Renewable Clearinghouse and Renewable Energy Network of the US Department of Energy (DOE),

(8) GREENTIE: Greenhouse Gas Technology Information Exchange of the International Energy Agency (IEA).

countries with economies in transition; and

3. idea of a broadly based consultative mechanism that could facilitate communication and the exchange of information among information providers and potential users.

The Expert Meeting was attended by 51 participants from 24 countries, the European Commission, UN agencies, business, non-governmental and academic organizations. The meeting was organized into a series of panels, in which the participants addressed a set of questions on the following topics:

- Information Systems to Support Major International Environmental Agreements,
- Assessment of User Needs,
- Evaluation of Existing Information Systems,
- The Need for a Consultative Mechanism.

This report to the CSD contains a summary of the discussions and conclusions of the Expert Meeting (Chapter 5).

CONCLUSIONS

UNEP has drawn the following conclusions about existing EST information systems in terms of user needs, information dissemination media and barriers to information access.

User Needs

UNEP has identified two types of users of EST information systems :

- technology users such as industries, government planners and policy makers, project developers or others who make or influence decisions about technology selection or imports; and
- information intermediaries who assist technology users with needs assessment, database searches, analysis and assessment of technological options, and help in the selection and tailoring of technologies to meet local or site specific conditions. These intermediaries can be university research centres, training institutions, consulting firms, governmental agencies, NGOs, environmental organizations, libraries and documentation centres.

When technology users seek information about potential technological or management improvements, they need to be directed at the earliest stage to relevant sources of information about appropriate ESTs. Such end-users, especially those in developing countries, need information about the costs, benefits, environmental impacts, successes and failures of technologies. In seeking this information, technology users often make initial contact with an information intermediary.

An intermediary's role in the exchange of EST information was found to be crucial to successful technological cooperation, especially between developed and developing countries. The intermediary is responsible for passing

on relevant information derived from EST information systems which are most often located in developed countries. The intermediary can analyze the technology user's needs, and then seek and provide information on technological or management issues. The intermediary can also provide "added value" to raw information from a database by interpreting how it might apply to the local circumstances. Intermediaries can also play a significant role as facilitators of contacts between EST supply companies and user industries who can then form partnerships and joint ventures.

In order to facilitate local use, and to allow better focus on local geographical needs, access to information systems should be decentralized. Since technology users in many developing countries do not have access to telecommunications and computer facilities, they would benefit from a dialogue about the use of ESTs with representatives in other developing countries. North-South and South-South collaborative networks would encourage such a dialogue and would potentially further the spread of indigenous technologies.

Information Dissemination Media

The experiences of different information systems using various information dissemination media (Internet, CD-ROMs, diskettes, printed material, etc.) have shown that each media can fulfill a particular need and that there is no single media which is superior to others in all instances. Conventional information dissemination methods that were found useful included: personal contact with an intermediary, brochures which give a brief description of a technology, lists of contact names and telephone numbers, newsletters, publications containing demonstration projects and case studies, seminars and training courses.

Electronic information exchange mechanisms such as diskettes, magnetic tape, CD-ROM, the Internet and other on-line services offer very fast access to up-to-date information and are of increasing importance. However, more traditional paper-based media will continue to be required to meet a range of needs. While the Internet is widely available and useful to technology suppliers, users and governments in developed countries, many developing countries are not yet fully integrated or linked to the Internet and continue to rely on other media. In developing countries an information intermediary might be able to link to the Internet through a local university or research institute.

CD-ROMs are often used in universities in developing countries, where the Internet is not yet available. It is easy to use and information can be exchanged in a very attractive format (including images and graphics). CD-ROMs however, cannot be updated easily.

E-mail facilities can be useful for networking in developing countries with inadequate access to the Internet. For example, in Latin America several countries have networked by e-mail for six months on urban environmental issues, and built up a comprehensive database on waste-disposal sites in the region.

Barriers to Information Access

Access to information about ESTs is difficult both for intermediaries and EST end-users for a number of reasons. Many databases, and the predominant amount of printed materials on ESTs, are available in English only. Lack of training in the use of software can be a barrier to the utilization of electronic databases, so that access to a computer terminal does not always mean access to appropriate data. Standardized EST terminology for data entry and database searching have yet to be developed.

Cost of information including cost of access to a database can be another barrier to information on ESTs. It is important that some EST information be available free of charge at the initial stage in order to raise awareness of ESTs among potential end-users in a developing country.

BUILDING BRIDGES - AN EST INFORMATION NETWORK PROGRAMME

There is a significant gap in the ability of interested parties to know about and to be able to access available information systems and databases relating to ESTs. Technology users and intermediaries would be able to do a better job in selecting ESTs, if they knew the range of information systems available and the information that they contain. In recognition of this need, the CSD at its 1996 session encouraged UNEP to develop an EST information network as a consultative mechanism to enhance cooperation and compatibility between existing and planned information systems and clearinghouse functions. UNEP has established the EST Information Network Programme in response to this request and to enable users and intermediaries to cross-refer to other, perhaps unfamiliar, databases and to consult with others in order to share experiences and knowledge which would be useful to them.

The Programme strategy involves five important elements. First, UNEP is seeking to understand the current state of EST information collection and dissemination throughout the world. Second, through the Programme, UNEP would create links, foster communication and collaboration between existing organizations involved with all aspects of EST. Third, UNEP would encourage those institutions with considerable successful experience with EST information dissemination to share that experience more widely. Fourth, UNEP would provide objective information on specific environmentally sound technologies to offer decision-makers a wider range of technology choices. Finally, UNEP would provide contextual information to decision-makers on scientific and technical aspects of particular ESTs so that they can understand the wider implications of the technologies.

The UNEP 1996-1997 Programme of Work issued by the Executive Director in November 1995 provides for the establishment of this consultative mechanism and for a range of activities to provide targeted information on ESTs to industry and national and local authorities and to develop and disseminate tools for technology selection by decision-makers taking into account the environmental impacts.

The basic institutional framework for the EST Information Network Programme would be a cooperative effort between UNEP Industry and Environment in France, the UNEP International Environmental Technology Centre in Japan and UNEP INFOTERRA in Nairobi and their collaborative partners in regional and sectoral terms. The Programme would be chaired by the Director of UNEP IE and implemented by UNEP IE, UNEP IETC and INFOTERRA in partnership. The Programme would involve a network of institutions which use and supply information on ESTs and would promote a decentralized approach based on a multiplicity of access points.

The Programme would carry out the following activities that were generally endorsed by the expert meeting participants and considered to be helpful.

Continuation and Update of the Survey of Information Systems on ESTs. The current survey would be used as the start of a biennial updated catalogue of EST related information systems, which would be made publicly available in printed form, on diskette and through the Internet. Information and technology users would be able to use the results of the survey to identify information systems and search them for information on ESTs. A specialized thesaurus on terminology dealing specifically with ESTs would be developed within the framework of the consultative mechanism.

Creating an EST Information Network. Many environmentally focussed centres already exist which could possibly be used as EST information centres. These include National Cleaner Production Centres, Basel Convention Centres, INFOTERRA focal points, UNEP IE and UNEP IETC, regional and national technology centres such as CADDET, academic research centres, commercial information providers and trade associations. Some of these may need particular help in accessing the EST information network. Creating links among such a wide range of additional centres would provide a multiplicity of new access points at the national level. The proposed EST Information Network Programme would assist in this by promoting a collaborative network of centres, which could cooperate in research and information exchange. The industrial and academic sectors could make a positive contribution and should be encouraged to participate in the network. North-South and South-South collaborative networks should also be fostered, especially to encourage the dissemination of indigenous environmental technologies. Links are currently being created from the UNEP IE and UNEP IETC homepages on the Internet to other institutions disseminating EST related information.

Establishing an Expert EST Forum. A forum on EST information systems would be held in the 1997-1998 time frame to review work undertaken and to identify strategic implementation actions. This would take the form of an expert meeting to discuss and develop collaborative efforts in the areas of user needs assessment, case studies and benchmarking EST information systems as follows:

(1) *User Needs Assessment*: Further assessment is necessary of the information needs of both information intermediaries and technology users. A User Needs Assessment should look at the following:

- Technology user needs. Ultimately governments and industry need EST information to make choices which protect the environment. Their needs are paramount. The assessment could consider ways of improving communication between the end-users and the information providers.
- Intermediary needs. The assessment could analyze who the information intermediaries are, especially in developing countries, how they operate, what types of databases can they access (electronic or not) and what their information needs are.

(2) *Case Studies*: In addition to the eight information system case studies already completed as part of the UNEP Survey, it would be useful to undertake case studies of specific information intermediaries. Also case studies of developing country experiences using EST information systems could be very useful.

(3) *Benchmarking EST Information Systems*: It would be helpful to carry out a benchmarking study evaluating existing EST information systems and providing an outline of best practice in EST information system development and operation. This would allow preparation and dissemination of materials to system operators on how best to improve system performance, on benchmarking in terms of information contained, on quality control with respect to the "environmental soundness" of information disseminated, and would improve the relative usefulness to end-users in developing countries and countries in economic transition.

Creating an Electronic Directory of ESTs. UNEP IETC, in collaboration with its supporting foundations (the Global Environmental Centre and the International Lake Environment Committee) has developed an electronic directory/database in order to ensure the systematic collection and dissemination of objective, targeted and quality-assured information on ESTs related to environmental management of large cities and to freshwater lakes and reservoirs.

Providing Access to Citations and Papers Containing Technical and Scientific Information on ESTs. The UNEP survey has identified a number of databases which contain citations and abstracts related to various aspects of ESTs. In order to extract these citations and abstracts, IETC has designed a project which will "trawl" the databases, pull-out EST related material and package these citations in a printed index and in-house purpose built database. This index would then be disseminated to readers in developing countries and countries with economies in transition.

The EST Information Network Programme should help clarify the current state of EST information dissemination and collection throughout the world. It would create links, foster communication and collaboration between existing organizations involved with all aspects of EST. The Programme should encourage those institutions with considerable successful experience with EST information dissemination to share that experience more widely. By providing objective information on specific environmentally sound technologies, the programme would offer decision-makers a wider range of technology choices.

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PART I

CURRENT STATE OF GLOBAL INFORMATION RESOURCES ON ENVIRONMENTALLY SOUND TECHNOLOGIES

Chapter 1

GLOBALLY ACCESSIBLE INFORMATION RESOURCES

Information is a commodity. The sale of information through database services has doubled over the past decade and the number of actual databases has increased three-fold. An entirely new industry has grown-up around the collection and dissemination information.

In certain fields, where the provision of information services is less economically attractive, governmental and non-governmental organizations have traditionally played key roles. However, whether commercial or public sector, the problem of ensuring widespread access to information contained within the information systems remains constant.

Greater accessibility to information on environmentally sound technologies (ESTs) has been recognized as a key foundation on which to build the global advancement toward the technological transformation needed to achieve sustainable development.

However, the current situation represents a real dilemma. Solutions to most environmental problems already exist. They have been developed worldwide and implemented by institutions and communities. Yet, knowledge of these solutions, many of which are technological in nature, appears not to be global.

Developing countries and countries with economies in transition, in particular, may be unaware of the range of technological alternatives available to solve specific environmental problems they face. Likewise, they may not know that a large number of these solutions are in the public domain, are in some cases free of charge and can significantly contribute to alleviating pressures on the environment. Raising awareness about innovative technological solutions is the first step toward solving certain environmental problems. It is important to know where the information is, how to access it and how much the information costs.

This report to the fifth session of the Commission on Sustainable Development (CSD) (April 1997) presents the findings of a survey of EST information systems undertaken by UNEP. The CSD fifth session will prepare for the June 1997 Special Session of the General Assembly, which will review the overall progress achieved in implementing the Rio commitments and discuss appropriate strategies for implementation in the coming years.

It is anticipated that this Special Session would not attempt to renegotiate Agenda 21, or other intergovernmental agreements in the field of sustainable development, but would concentrate on their further implementation in order to:

- revitalize and energize commitment to the concept of sustainable development, to ensure it a central place on the political agenda and to reinforce momentum for its implementation at the international, national and local levels.
- frankly recognize failures to meet certain goals and identify reasons for failure;
- boost implementation of the commitments made at the 1992 United Nations Conference on Environment and Development (UNCED) through means including the identification of innovative approaches to cooperation and financial assistance, and through concrete proposals for action;
- define priorities for the period beyond 1997.
- raise the profile of issues that were not sufficiently addressed at UNCED, or where significant developments have taken place since 1992. These might include changing consumption and production patterns, energy and transport, urban issues, enterprise, fresh water, and management of risks.

The Special Session will provide an excellent opportunity for a review of the progress with the implementation of Chapter 34 of Agenda 21 entitled "*Technology transfer cooperation and capacity building*" which states that the availability, access and transfer of scientific and technological information concerning environmentally sound technology is an essential requirement for sustainable development (section 34.7). Furthermore, section 34.8 states that the primary goal of improved access to technological information is to enable informed choices, leading to the access and transfer of such technologies and the strengthening of countries' own technological capabilities.

UNEP has sought to address these issues through the abovementioned survey and with the establishment of the Environmentally Sound Technology Information Network Programme.

INTERNATIONAL DIMENSION

The need for this survey has been established through a number of major international meetings, round tables and workshops. The Seoul Workshop on the Promotion of Access to and Dissemination of Information on Environmentally Sound Technologies held in Seoul, South Korea in December 1994, requested that UNEP prepare such a survey. The Seoul Workshop also suggested that the CSD consider endorsing the establishment of a *consultative mechanism* to enhance cooperation and compatibility between existing and projected systems for exchange of information on ESTs, for example, those operated with the support of the UN system and those under international conventions.

The UNIDO Round Table on Technology Transfer, Cooperation, and Capacity Building for Sustainable Development, Vienna, 6-8 February 1995, endorsed the implementation of the Seoul Action Plan.

The UNEP Governing Council, in its Decision 17/21 of 1993 called upon the Executive Director to promote the identification of ways and means to facilitate access by and transfer of technology to developing countries in respect of cleaner production methods, techniques and technologies.

The fifth meeting of the Inter-Agency Committee on Sustainable Development, 1-3 February 1995, welcomed in principle the initiative of establishing a *consultative mechanism*, and expressed interest in participating in its further elaboration. It was noted

that, as a first step, UNEP would undertake, (in cooperation with other agencies), a survey and follow-up consultations with concerned agencies before fully endorsing the consultative mechanism as an ongoing institutional arrangement. It was agreed that the private sector and NGOs should be included in the consultative process at an early stage because of the useful information they can provide.

ACCESS BARRIERS

Facilitating access to EST information is the focus of this report. Access to and transfer of technology should be the logical sequence following this facilitating role.

The availability of ESTs via cooperative technology transfer depends largely on political willingness at the international level to pursue an innovative environmental agenda as the new millennium approaches. Some key difficulties encountered with technology transfer, and with regard to how to access information on ESTs once located, can be explained with reference to three key barriers:

a) **Cost:** There are several sources which provide information free of charge. Public domain type of information, from the private sector, most inter-governmental (primarily the UN system) and governmental institutions, is generally accessible free of charge. In fact this survey has identified cases where once free information was repackaged by another institution and subsequently made available at a cost. It can be argued in some instances that the repackaging exercise adds value to the original information.

   Cost may not be only that of purchasing information; another cost is that of the means used to request and to receive information: stamp, telephone, fax and e-mail. Those institutions which charge for their information services and supply are identified as such in the survey. The potential users of EST information are not given any special treatment at present, but UNEP will look into negotiating some form of preferential arrangement for EST users. A major role for the EST Information Network Programme will be to look into the cost element with a view to reducing or waiving the costs pertaining to access among the members in the first instance and eventually to all the information systems who are included in the survey.

b) **Language barrier:** Most information systems identified by UNEP have information on ESTs in English only, whereas most of the world population does not use English as a working language. No matter how relevant the information on a technology may be, it will be of no value to the decision-maker or industrialist who does not know the language. Support to sub-networks using other languages such as French and Spanish may have to be considered as well as the establishment of a translation facility for the information on the technologies which may have the most positive impact on the environment.

c) **Access to information technology:** The advent of Internet in the information arena is similar to the advent of the personal computer in the 1980's. However, Internet does not yet cover all the developing countries, particularly those who need access to ESTs most. The universal use of Internet is conditioned by economic considerations, especially the telecommunications infrastructure, and by political options where some governments are hesitant to introduce a system over which they may have limited control. UNEP will promote the use of Internet in parallel with other conventional means of communication which are more readily available.

In compiling this report, UNEP has identified the increasing use of Internet by system operators with more and more institutions setting-up homepages. It now appears that the Internet may be in the process of supplanting Bulletin Board System (BBS) networks, which hitherto linked users with particular brands of computers, operating systems or bulletin board software. In the case of the latter, the user logs onto the BBS using a modem and telephone line.

This transition has already happened with a number of EST information systems. For example, UNEP Industry and Environment has closed the International Cleaner Production Information Clearinghouse (ICPIC) bulletin board and opened a new homepage. Likewise, the United States Environmental Protection Agency provides access to Enviroene via both bulletin board and Internet. The logic behind these changes is based on the need for global connectivity and cost-effectiveness which Internet offers.

The Internet, however, is not universally accessible, particularly for developing countries, although change in that direction is encouraging. Many useful resources on the Internet are now commercial information services (Dialog/Datastar, Questel/Orbit, Cambridge Scientific Abstracts, etc.) or services partially or completely restricted to specific user community such as an academic society. Moreover, a generally accepted model has yet to be developed for the dissemination of information on a commercial or non-profit basis via the Internet. In the meantime, while the role of Internet continues to evolve, other on-line medium including BBSes will remain useful means of information dissemination particularly when the emphasis is on small quantities of current information.

Moreover, the future of the Internet is not assured. Even some of its most ardent supporters are predicting the possible collapse of the Internet. As of January 1995, there were six million servers connected to the Net and information traffic is growing at around 10-15% every month. This exponential growth has led to concerns about possible access problems and slowdowns in data transmission speeds which could make the Internet less

attractive for millions of users. The only way to circumvent these problems is to invest heavily in improvements to the Internet's infrastructure.

In this context, when the user is interested in accessing large databases or archives covering a range of information or trends then CD-ROM provides an ideal medium and is a significant competitor to telecommunications technology. Another important medium for information dissemination which is being used by many of the respondents to the survey is computer diskette. It is clear, however, that this medium is currently preferred when disseminating information in the form of software tools. This report identifies a number of institutions which distributed diskettes containing a software programme which can be loaded onto the users computer.

OBJECTIVES

This report has been prepared by the UNEP International Environmental Technology Centre (IETC), UNEP Industry and Environment (IE) and the Global Environmental Information Exchange Network (INFOTERRA). There are five chapters in addition to this introduction. Chapter 2 outlines the approach to survey implementation and provides details of some of the key terms used in this report. Chapter 3 evaluates the results of the survey including the types of information systems identified, their geographic distribution and the types of ESTs they cover. In Chapter 4, the findings from eight case studies are summarized and key lessons are outlined. Chapter 5 presents the main outcomes of an expert meeting on EST information systems which was held in Paris in October 1995. Finally, Chapter 6 draws conclusions and makes recommendations on how best to overcome the barriers to effective EST information collection and dissemination.

A second part accompanies this main report which includes a catalogue of EST information systems identified in the survey together with details of EST-related institutions and information sources (literature).

The catalogue includes details of 84 information systems and 125 institutions involved in various aspects of EST information collection and dissemination, research, technology transfer and capacity building activities. Many of these institutions are members of existing regionally based networks.

The lists presented in this report are not exhaustive and inclusion herein does not necessarily represent endorsement by UNEP of environmental soundness of institutional activities nor the quality of the information contained.

Rather, this report presents information on the systems and institutions in order to meet two objectives. These are:

1. To provide a tool to suppliers, intermediaries and users of EST information which can be used to help them establish new contacts, new links, better information dissemination services and indeed better use of the information available.
2. To encourage readers of this report to inform UNEP of any relevant systems, institutions and literature not mentioned.

In fulfilling these objectives, UNEP is building on existing practices of system operators throughout the world who are linking their systems and sharing their databases. Table 1.1 illustrates the extent to which this collaboration is already taken place. It shows how, whether for commercial or administrative reasons, certain databases are accessible via more than one institution.

The very wide scope of ESTs, which affects every sector in a country's economy, implies that this report's audience will be heterogeneous, both in terms of expectations and in terms of the ability to exploit the information resources from the range of systems available. Although access to the survey results should remain unconditionally open to everyone, there may be some benefit in having a centre in each country that would play a role of coordinator and facilitator. This role would best be carried out by an information intermediary designated as part of the new EST Information Network. It is important to ensure that a wider audience is made aware of these sources of information and expertise on EST.

The survey undertaken by UNEP gives a clear indication that most environmental problems do indeed have a solution. The problems identified are those pertaining to where solutions can be found and once located how they can be accessed. The list of institutions and information systems included in this report represent an initial sample of the wealth of information on EST, sometimes in databases where it had not been expected.

With the contemporary phenomenon of information explosion, the challenge for the future may not be to find any source of information but the best source on a specific technology. What Jacques Cousteau coined as "*information pollution*" is what future surveys will have to address through refinements in the search criteria used for describing information systems dealing with ESTs.

Another issue to be addressed in the future work along the same lines is the assessment of information provided to users. Assessment work is a costly exercise and requires a high as well as a wide range of expertise if it is to be carried out by a single entity. Alternatively, it can be carried out in a decentralized manner by peer review, among the beneficiaries of the technology transfer. A feedback mechanism will have to be established to make project implementors aware of the first hand assessment of the information quality received through this survey.

GLOBALLY ACCESSIBLE INFORMATION RESOURCES

Table 1.1: Selected Database by Institutions/Database Providers

Name of Database/ On-line Hosts	Period	Records	Asian Institute of Technology	Cambridge Scientific	CEDAR	ECHO	ESA-IRS	Engneering Infomation Inc.	Dialog/Datastar	FAO	IEA/OECD	Orbit/Questel	Silverplatter Infomation Inc.	STN INTERNATIONAL	UNEP	USDoE	US/EPA
ACID RAIN	1984	4,000					●										
AGRIS	1975	2,100,000					●		●	○			○				
ATTIC (BBS)	1988	n/a			●												●
AQUALINE	1960	167,000					●		●			●	○				
AQUASCI	1978	480,000	●						●	○			○	●			
CABI	1973	3,120,000					●		●				○	●			
CARIS	1982	27,000					●		●	○			○				
CEABA (Chem Eng. and Biotech Ab)	1975	300,000							●			●		●			
COMPENDEX	1969	3,400,000					●	●	●			●	○	●			
CLU-IN (BBS)	n/a	n/a															●
DTA	1975	7,000												●			
EDF-DOC	1972	443,000					●					●					
Energy/Environment Dsc	1980	700,000						○	○								
Energyline	1971	167,000					●		●				○				
ENSICNET	1978	11,000	●														
Enviroline	1971	150,000					●		●				○				
EP3 INFO	1993	n/a															●
EREC	1994	n/a														●	
EREN	1994	n/a														●	
ETDE	1974	3,000,000							●			●	○	●			
EUREKA	1985	1,000				●											
GREENTIE	1993	5,400									●						
ICPIC	1990	1,000			●										●		
IEA CADDET EE	1988	1,800									●						
IEA CADDET Ren	1994	150									●						
IEA Heat Pump	1978	1,000									●						
JISCT	1985	2,020,000												●			
OAIC	1991	7,000													●		
OHMTADS	1990	1,400											○				●
POLLUAB	1970	200,000		●			●		●					●			
PPIC (Envirosense)	1990	n/a															●
RACT/BACT/LAER (BBS)	n/a	n/a															●
RERIC	1981	9,000	●														
SAGE	1995	n/a															●
SWRA	1968	270,000					●										
TOXLINE	1940	1,600,000							●					●			
TROPAG	1975	88,000					●					●	○				
VISITT	1982	231			●												●
WASTE INFO	1970	86,000										●	○				
WATERLIT	1976	250,000											○				

Key: ● Online ○ CD-ROM

Chapter 2 ADVANCING THE SURVEY

This chapter outlines the approach to the implementation of the UNEP survey of EST information systems from January 1995 onwards. This report presents the details of information systems and sources including sites accessible via the World Wide Web (WWW), on-line host computers and bulletin board systems with modem dial-up capability, clearing houses and databases. Where possible, information presented in this report has been verified, and deficiencies, gaps and duplications have been reduced. Every effort has been made to ensure transparency in the approach and clear definitions of the terms used. For instance, the definition of the term Environmentally Sound Technology (EST) as applied in this report is presented in Box 2.1.

In undertaking this survey, a wide range of similar terms have been identified, some of which have been in existence for as long as EST and are equally widely known, including clean, green, soft, appropriate and alternative technologies.

EST information resources can be divided into three groups:

- Information systems include primarily computerized systems for collecting, compiling, organizing and managing databases containing information relating to ESTs. These systems provide users with the opportunity to undertake searches directly or through an information intermediary.
- Institutions provide access to policy, research and training programmes relating to ESTs and information dissemination. Sub-units within institutions often play a key role and will be identified where appropriate. Database providers are included within this category. They offer comprehensive information services on commercial and non-profit basis covering an extensive range of issues, not all of which are environment related. Information collection and provision is the main business of these organizations and they have considerable expertise in database development and operation. They provide access to an extensive range of databases some of which contain EST related information.
- Information sources include reports, articles and studies containing data, test results and general information on ESTs.

UNEP has obtained details of information systems and sources relating to technologies in all sectors (by environmental types, technology types and industrial sectors). Information has been sought from both public and commercial information systems.

A set of technology categories have been adopted to describe the content of EST information systems. These are presented in Box 2.2. The categories provided are not completely mutually exclusive. There is some overlap, but they indicate the main focus of the information systems. Any information system can provide information on multiple technology categories. It is recognized that more detailed categorization needs to be developed for future reports and work has already commenced on the compilation of additional *descriptors*, based on INFOTERRA's 1995 Thesaurus of Environmental Terms.

Box 2.1:
What are Environmentally Sound Technologies?

Environmentally Sound Technologies (ESTs) encompass "hard" and "soft" technologies that have the potential for significantly improved environmental performance relative to other technologies. Soft technologies refer to management techniques (such as environmental technology assessment, risk assessment and auditing) that provide the contextual framework through which "hard" technologies should be applied. Hard technologies include infrastructure, pollution control, sewage and waste treatment facilities, water treatment and supply technologies, remediation technologies and pollution monitoring equipment. Many of these technologies may originate from developed countries and be subject to technology transfer. However, there is an ever increasing number of "indigenous" or "home-grown" technologies emerging from developing countries that are environmentally and socially appropriate which often take the form of ad-hoc and practical solutions to pressing environmental problems.

Broadly speaking, ESTs are technologies which protect the environment, are less polluting, use resources in a sustainable manner, recycle more of their wastes and products, and handle all residual wastes in a more environmentally acceptable way than the technologies for which they are substitutes. The integrated and diverse nature of ESTs is acknowledged in Chapter 34 of Agenda 21, which argues ESTs are not just *"individual technologies, but total systems which include know-how, procedures, goods and services, and equipment as well as organizational and managerial procedures"*.

However, it is recognized that the term EST is difficult to define in an absolute sense since the environmental performance of a technology depends upon its impacts on specific human populations and ecological systems. Moreover, technological performance is influenced by the supporting systems for management, monitoring, maintenance, human resources and infrastructure. The soundness of environmental technology is also influenced by temporal and geographical factors, to the extent that some technologies may be environmentally sound now but may be replaced in the future by even cleaner technologies. Likewise, what may be an environmentally sound technology in one region may not be such in another.

Box 2.2:
Technology Categories

1. Water Pollution Control and Water Supply
Technologies for water and wastewater treatment, water supply and water resources management.

2. Air Pollution Control
Technologies for the control and treatment of air pollution emissions (NOx, SOx and CO - excluding Greenhouse Gases).

3. Noise and Vibration Protection and Abatement

4. Solid Waste Management
Technologies for collection, transport, storage, treatment, recycling and disposal of solid waste.

5. Hazardous Waste Management
Technologies for collection, transport, storage, treatment and disposal of hazardous waste.

6. Energy
Technologies for alternate and renewable energy supplies and for energy conservation.

7. Cleaner Production
Integrated preventative environmental strategies for process and products to reduce risks to humans and the environment.

8. Land and Agriculture
Technologies related to the sustainable development and conservation of land, agriculture and natural resources including land remediation, soil conservation, mineral extraction, biodiversity, agro-chemicals, sustainable agriculture and afforestation.

9. Construction, Building and Engineering
Technologies related to the engineering, infrastructure development and building construction (includes machinery, equipment or method/ techniques of construction) which are environmentally sound.

10. Global Environment
Technologies for reduction of greenhouse gas emissions, mitigation of global warming and alternatives to ozone depleting substances (ODS).

Through this survey work, UNEP found that there are at present no information systems dealing exclusively with ESTs. Existing systems deal with various aspects of environment-related technology such as cleaner production, renewable energy, water and sanitation issues, etc. However, it is anticipated that more systems will embrace the concept of environmentally sound technology.

Moreover, the actual "environmental soundness" of the technologies described in various information systems remains unclear. In-depth assessment of the environmental aspects of the technologies in all information systems and sources, although desirable, has not been possible.

A large part of the information presented in this report is based on the material submitted by the EST information providers. Where possible the information has been verified for accuracy. It has not been possible to survey the needs of users of these information systems in order to establish the degree to which their needs are currently being met.

PROJECT MILESTONES

Stage 1 Survey

Stage 1 of the survey was undertaken during the months January - March 1995. A survey questionnaire, dated 16 January 1995, was sent out to approximately 240 organizations such as UN agencies, other international and national organizations, industrial and research organizations, and other groups considered likely to possess relevant information on the subject. The deadline for response was set for 15 February 1995. A systematic follow-up was initiated and by May 1995, a total of 121 responses to the Stage 1 questionnaire survey had been received, representing a response rate of 49%.

A total of 51 information systems and sources were identified and presented in the Interim Report to the April 1995 Session of the CSD. Most of the systems included information on pollution control technologies (59 percent) and energy technologies (56% focused on energy conservation and renewable energy technologies). Twenty-two percent of the systems included information on cleaner production. Most information systems were located in industrialized countries and operated by public sector institutions. Very little information was obtained on the activities of industrial associations or from specific industrial sectors. Interestingly, the most common form of information dissemination was hard copy (47 percent) and query response (43 percent). However, 41% of systems distributed information via the World Wide Web, with many others planning to do so.

Respondents to the Stage 1 survey identified a number of additional institutions, information systems and sources. UNEP concluded, therefore, that a Stage 2 survey was required in order to further examine these systems. Additionally, it was recognized that the information provided by different

information systems managers would require some form of assessment and/or verification in order to ensure accuracy and consistency.

Submission of the Interim Report to CSD - April 1995

The findings of the Stage 1 survey were well received by the CSD at its third session on 11-28 April 1995. The UNEP Interim Report entitled "*Survey of Information Systems Related to Environmentally Sound Technologies*", which was prepared at that time, was requested by a large number of organizations and individuals. The CSD's specific response to the report can be summarized with the following recommendations:

- Include additional systems and sources especially those from developing countries and those related to indigenous technologies.
- Verify information, analyze deficiencies, gaps and duplications.
- Evaluate the systems with respect to quality of information, accessibility and costs.
- Prepare terms of reference for a broadly based consultative mechanism.

The importance of country-based information access points on ESTs was also recognized by the CSD and it was argued that these should be networked and strengthened. The CSD proposed that this process be supported by concrete measures to promote the exchange of information about ESTs and the capabilities of information users, with a focus on the needs of small and medium sized enterprises. It was recommended that the United Nations system, Secretariats of the various conventions, and other international organizations should consider appropriate action towards designing a consultative mechanism to enhance cooperation and compatibility between existing and projected information systems. The objective would be to ensure that all interested parties are made aware of the availability of systems and that, to the extent possible, there should be compatibility and inter-connections between them.

Stage 2 Survey

Acting upon the CSD's recommendations, UNEP surveyed an additional 187 organizations involved with EST dissemination from May 1995 onwards (including 41 which were resurveyed from Stage 1). A total of 35 responses were received as of December 1995. This is a 19% response rate, which is much lower than Stage 1. The break-down of questionnaires sent and replies received for Stages 1 and 2 by UNEP regions is given in Table 2.1.

A total of 156 responses were received for Stages 1 and 2 (December 1995) representing a combined response rate of 41%. A project database has been constructed which contains details of the 84 EST related information systems and 127 institutions. Evaluation of the results of the second stage of the survey is presented in Chapter 3.

Internet Search

The 1995 Interim Report found that 41% of systems disseminated information through the Internet and other on-line services, and many others anticipated expanding to an on-line system. Consequently, the project team surveyed the Internet in August 1995 in order to establish the degree to which it is being utilized with respect to EST information dissemination and transfer. From this work, a large number of additional institutions have been identified which are currently involved in various aspects of EST information dissemination, technology research and transfer via the Internet.

The survey method adopted was relatively straightforward. After most responses to Stages 1 and 2 of the survey were received, those which indicated that they offered on-line access to a database or to other services were identified or those organizations whose self-description offered some promise of a useful Internet-accessible service were investigated further. The names of these institutions, and the names or acronyms of their databases or on-line services, were used as keywords for searches of World Wide Web (WWW) servers. Some WWW sites offered gateways to those of other organizations which are also involved in technology transfer or environmental protection. Others simply provided lists of similar organizations, with Uniform Resource Locators (URL), email or postal addresses. These new names were then explored. In addition to organization and database names, variants of the terms "environmental technology" were used in keyword searches, initially producing over 500 leads. Those whose names suggested that they might be helpful were then located and reviewed on-line.

By using both the survey results and independent keyword searches, over 70 Internet sites related in varying degrees to ESTs were discovered including international and regional organizations, agencies of national governments, universities, non-governmental organizations, commercial database vendors, and trade organizations. However, any representation of what

Table 2.1: Breakdown by UNEP Regions of Total Questionnaires Sent and Responses Received (Dec. 1995)

	Questionnaires Sent	Responses
Africa	10%	12%
Asia and the Pacific	23%	21%
Europe (incl. CIS)	36%	36%
Latin America & Caribbean	6%	4%
North America	19%	19%
West Asia	6%	8%
Total:	100%	100%

can be found on Internet must be a qualified one since the number of organizations with homepages is growing daily and as such any list risks obsolescence even before publication. The speed of change in this area is extremely rapid and it is essential that the Internet be subject to regular survey and monitoring.

Verifying the Results

In undertaking this survey every effort has been made to ensure that the data collected accurately describes the information systems under consideration. A follow-up survey was therefore carried out in order to verify the information collected during Stage 1. This involved the compilation of a report sheet which contained the current information available on each of the 51 systems presented in the Interim Report. This was then disseminated to the system operators who were asked to confirm whether or not the information was accurate and to make any necessary amendments. Verified information was collected on over 30 systems. Based on the findings of this verification process, information systems have been divided into three categories as shown in Box 2.3.

In preparing for the publication of this report, UNEP undertook a second verification check of all 84 information systems to confirm the accuracy of the descriptions and contact details in July-August 1996. Responses were received from 41 system operators (a response rate of 49%) and the system descriptions have been updated accordingly.

In addition, in February 1996, efforts were made to verify the information on 127 institutions presented in this report. Details of the institutions including descriptions, contact names and addresses were sent by fax or e-mail to the institutions concerned. Responses were received from over 50% of the institutions.

Case Studies

In order to respond to the CSD's request for more detailed evaluation of information quality, accessibility and cost, eight information systems were selected as case studies. The approach involved a review of all available information on the case studies collected during survey work in order to identify deficiencies and gaps. Key contact persons in the organizations were identified, a list of questions submitted and follow-up meetings held. Trial data searches of the systems with EST specific information requests were undertaken, where possible. Further discussion can be found in Chapter 4 of this report and full case studies are available in the appendices.

Expert Meeting

The CSD recommended UNEP prepare terms of reference for a broadly based consultative mechanism. In response to this recommendation, UNEP sought to involve a wide range of organizations and national representatives in the process by holding the *Paris Expert Meeting on EST Information Systems* in October 1995. The need to ensure that ESTs are compatible with nationally determined socio-economic, cultural and environmental priorities and development goals has been widely recognized. This view was reinforced at the Expert Meeting, where the participants high-lighted the role of EST information intermediaries. The objectives of the meeting were to evaluate:

- existing and planned EST information systems with respect to coverage, quality of information, cost and accessibility;
- needs and requirements of potential users;
- idea of a broadly based consultative mechanism.

The Expert Meeting was attended by 51 participants from 24 countries, the European Commission, representatives from the UN agencies, and representatives from business, non-governmental and academic organizations. The outcomes of the meeting are presented in Chapter 5.

Box 2.3: Categories of Information Systems

Category A: These systems contain information which is closely related to ESTs. The system operators responded to the verification check and the project team is confident that the description of the information system is accurate. Likewise, UNEP may have first hand experience of the systems or have been able to obtain more accurate information via the Internet.

Category B: These databases, such as Compendex, AGRIS, CARIS and CABI, contain references to ESTs, although it may only be a sub-element of the database and not organized as an independent category. However, interesting contextual information may be provided on the wider aspects of ESTs. Moreover, the system operators responded to the verification check and the project team is confident that the description of the information system is accurate. UNEP may also have first hand experience of the systems or have been able to obtain more accurate information via the Internet.

Category C: These systems have been identified through the survey questionnaire and the Internet survey. The data obtained indicates that the system may contain information of relevance to EST but accuracy of the system description could not be verified. Upon verification, these systems would be placed under either categories A or B, or deleted at the next update.

Report to the Fourth Session of the CSD - April 1996

UNEP presented a second report to the fourth session of the CSD from 18 April - 3 May 1996. The session was attended by government ministers and representatives of national administrations, international organizations, international financial institutions, business and industry, trade unions, youth groups and NGOs. At the session, the Commission completed its review of all Chapters of Agenda 21 in the context of its first multi-year thematic programme of work. UNEP's second report was welcomed by the CSD, which invited UNEP to "continue its work to develop an EST information system network so as to increase compatibility and cooperation among information systems and sources related to ESTs, and to keep the Commission informed of its progress." In this context, UNEP was invited to consider developing and maintaining a catalogue of EST-related information systems, and to eventually make such a catalogue publicly available in printed form or on diskette and through global networks, such as the Internet.

With respect to Chapter 34 on Technology Transfer, participants at the meeting recognized that significant and increasingly rapid gains in resource and productive efficiency are required in order to achieve sustainable development. It was argued that the technological transformation of developing countries has to be accelerated through the infusion of environmentally sound technologies and systems of production. While there has been considerable discussion and many international meetings on the transfer of environmentally sound technology over the last few years, there was general agreement that the actual transfer of such technology has been slow and uneven. It is also difficult to measure the real transfer of technology because the bulk of such movement takes place through the private sector at an enterprise to enterprise level.

The CSD urged countries, international and business organizations to share information on the use and effectiveness of policy measures adopted by Governments and the private sector to promote, develop or create greater demand for technology and technological innovations aimed at changing methods of production, including improving efficiency in the use of energy and natural resources and in reducing pollution and waste.

The CSD also urged Governments of developed and developing countries and countries with economies in transition, with the assistance of regional institutions and international organizations, to strengthen the role of technology centres, where necessary, including cleaner production centres and information clearing-houses, as intermediaries and facilitators for the transfer of ESTs. In this regard, innovative partnerships between and sharing of experience by and among such centres should be promoted to increase interaction and to benefit from methods that have proven successful in other contexts.

UNEP has responded to these requests in three ways.

- With the establishment of the UNEP Environmentally Sound Technology Network Programme in June 1996 which includes a comprehensive range of measures to promote greater communication, collaboration and cooperation between institutions involved with EST related activities. These measures will now be consolidated into one integrated Programme administered by the UNEP IETC, IE and INFOTERRA.
- With the compilation of this report for the fifth session of the CSD, UNEP is fulfilling the request placed upon it.
- With the establishment of the UNEP International Environmental Technology Centre homepage through which the findings of this work are currently being disseminated and virtual network created (URL: *http://www.unep.or.jp/*). The UNEP IE homepage is also now operational and will provide access to two information clearinghouses (URL: *http://www.unepie.org/*).

More information on these activities is presented in Chapter 6.

Chapter 3 EVALUATING THE RESULTS

The UNEP survey, both by mail and Internet searches, covered over 400 institutions from which over 165 (41%) responses were received. The survey identified 84 information systems containing EST related information. When broken down according to the categories presented in Chapter 2, there are:

- *34 Category A--Confirmed EST Information Systems* - These are systems that have been confirmed to contain substantial information on ESTs.
- *15 Category B--Confirmed Information Systems* - Not Primarily EST Related. These are information systems that deal with other environmental issues but contain some EST information.
- *35 Category C--Unconfirmed Information Systems* - Potentially EST Related. These are information systems which may contain EST information. However, either the detailed characteristics of the system or the extent and nature of the information were not confirmed during the survey period.

The Catalogue of EST Information Resources included in this report contains descriptions of each information system. The systems are characterized in terms of the technologies covered (eg. pollution control, cleaner production, greenhouse gas reduction,

Table 3.1: Characterization of Category A: Confirmed EST Information Systems

System Name	Technology										Country			Dissemination Method						Cost			Access		
(abbreviated)	a	cp	cnt	egy	gbl	haz	lan	nv	sw	w	in	re	na	cd	dk	hc	mt	ol	q	t	c	ni	r	u	ni
ACPD		●											●					●		●				●	
ANNETTE	●	●	●	●	●	●	●	●	●	●		●				●		●			●		●		
APCTT Data Bank		●										●				●			●		●		●		
ATTIC-US EPA						●					●							●		●				●	
CLU-IN						●	●						●			●		●		●				●	
CTCCIS	●												●					●	●		●			●	
CTIN	●	●		●			●		●	●			●		●			●				●		●	
EEIS		●	●	●		●	●			●	●				●	●					●			●	
ENSICNET	●	●					●		●	●		●						●			●		●		
Envirotech OnLine	●	●	●	●	●	●	●		●			●						●	●		●			●	
EREC			●	●	●		●				●				●	●		●	●			●		●	
EREN				●	●		●		●		●							●		●				●	
ETDE				●	●					●	●			●				●			●			●	
GARNET									●	●	●							●		●				●	
GEM	●	●	●	●	●		●		●	●	●				●	●		●		●				●	
GREEN PAGES	●			●			●	●	●	●	●										●			●	
GREENTIE	●	●		●	●						●				●	●		●		●				●	
ICPIC		●			●						●				●			●	●	●				●	
IEA CADDET EE				●							●				●	●					●			●	
IEA CADDET Ren				●							●				●	●		●	●		●			●	
IEA Heat Pump				●							●				●	●		●		●			●		
ISAT	●		●	●				●		●	●					●		●	●	●				●	
JAEE	●							●	●	●			●			●		●		●				●	
NSFC										●			●			●		●	●	●				●	
OAIC	●	●			●						●				●			●	●	●				●	
OHMTADS						●							●	●	●		●	●			●			●	
PPIC (Envirosense)	●	●		●				●		●			●					●	●	●				●	
RACT/BACT-EPA	●							●		●	●							●	●	●				●	
RENTEK	●	●								●			●		●						●		●		
RERIC				●								●				●		●			●		●		
TISGLOW				●	●								●			●					●			●	
VISITT							●		●				●		●			●		●				●	
WAST						●			●	●			●	●		●		●			●			●	
Sub Total Cat A	14	13	7	17	10	6	11	7	11	15	14	5	14	3	13	16	1	27	11	16	15	2	6	27	0

Legend:
Technology:a-air,cp-cleaner production, cnt-construction and engineering, gbl-global, egy-energy, haz-hazardous waste, lan-land and agriculture,nv- noise and vibration, sw- solid waste, w- water
Country: (the country or region from which the technology originates), in - international, re from a specific region, na-national
Dissemination Method (for information) cd-cd rom, dk-diskette, hc-hard copy, mt- metal tape ol-on line, q-query response service,
Cost (cost of information): f-free, c-cost involved, ni-no information
Access (to the information): u-unrestricted, r-restricted, ni-no information

alternatives to ozone depleting substances, energy conservation and renewable energy, etc.). The type of information contained is also presented as well as the media used for dissemination (eg. hard copy, diskette, on-line, etc.), the availability of the information to the public and the costs of information access and use. The survey results are evaluated below and presented in Tables 3.1 to 3.4 and on Figures 3.1 to 3.3.

EVALUATION

Technologies Covered

Figure 3.1 presents each information system by the technologies covered. The most reliable and useful information with respect to technologies covered are for systems in Category A. Of the 34 systems in Category A:

- 47% of the systems included information on water pollution control and water supply,
- 44% contained information on air pollution control,

Figure 3.1: Technologies Covered

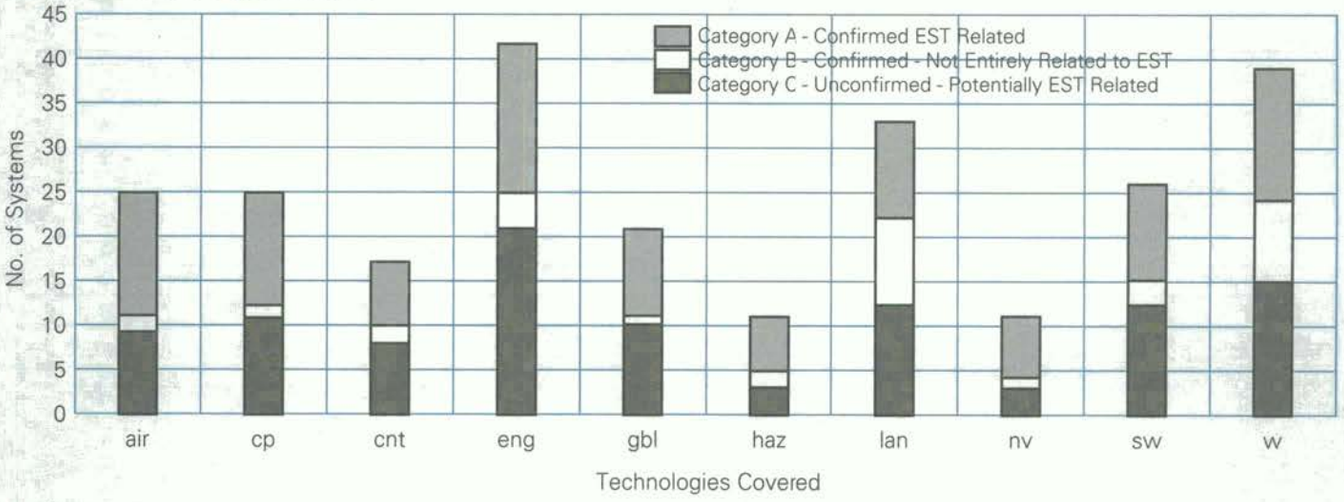


Table 3.2: Characterization of Category B: Confirmed EST Information Systems - Not Primarily EST Related

System Name (abbreviated)	Technology										Country			Dissemination Method						Cost			Access		
	a	cp	cnt	egy	gbl	haz	lan	nv	sw	w	in	re	na	cd	dk	hc	mt	ol	q	t	c	ni	r	u	ni
AGRIS				●			●			●	●			●	●			●			●			●	
AQUALINE										●	●			●				●			●			●	
AQUASCI							●			●	●			●		●		●			●			●	
CABI							●				●			●		●		●			●			●	
CARIS				●			●				●			●	●	●	●	●			●			●	
CC SEARCH							●				●					●		●			●			●	
DTA			●								●			●			●	●			●			●	
ENERGYLINE				●							●			●		●		●			●			●	
ENVIROLINE	●						●		●	●	●					●	●	●			●			●	
GETNET		●			●		●		●	●	●			●				●	●	●				●	
HOMS										●	●				●	●		●	●	●			●		
JISCST-E			●	●			●			●	●							●			●			●	
POLLUABS	●					●	●	●	●	●	●					●	●	●			●			●	
SWRA										●			●					●		●				●	
TOXLINE						●	●				●					●	●	●			●			●	
Sub Total	2	1	2	4	1	2	10	1	3	9	14	0	1	8	3	9	5	15	2	3	12	0	1	14	0

Legend:
Technology:a-air,cp-cleaner production, cnt-construction and engineering, gbl-global, egy-energy, haz-hazardous waste, lan-land and agriculture,nv- noise and vibration, sw- solid waste, w- water
Country: (the country or region from which the technology originates), in - international, re from a specific region, na-national
Dissemination Method (for information) cd-cd rom, dk-diskette, hc-hard copy, mt- metal tape ol-on line, q-query response service,
Cost (cost of information): f-free, c-cost involved, ni-no information
Access (to the information): u-unrestricted, r-restricted, ni-no information

Table 3.3: Characterization of Category C: Unconfirmed Information Systems - Potentially EST Related

System Name	Technology										Country			Dissemination Method						Cost			Access		
(abbreviated)	a	cp	cnt	egy	gbl	haz	lan	nv	sw	w	in	re	na	cd	dk	hc	mt	ol	q	t	c	ni	r	u	ni
ACID RAIN					●						●					●	●	●			●			●	
ARET		●	●	●	●		●		●	●			●	●	●	●						●	●		
ASSET				●								●		●	●	●					●			●	
ASXES INFO										●			●		●	●					●			●	
CEABA	●	●	●	●		●	●				●					●	●	●			●			●	
CES	●			●			●		●	●	●			●	●			●			●			●	
CISEPI		●		●						●			●			●		●				●			●
CNISEP	●	●		●			●						●					●			●			●	
COMPENDEX	●			●				●		●	●			●				●			●			●	
CPAS		●	●				●		●	●	●				●			●				●		●	
EDAS			●	●								●			●							●	●		
EDF-DOC				●					●		●					●		●			●			●	
EEI DIRECTROY				●									●		●	●		●			●			●	
EIDS	●	●		●	●	●	●	●	●	●			●	●				●			●			●	
EGY CONSERV				●									●			●			●			●	●		
EGY TECH DIREC				●									●		●	●				●				●	
EGY/ENV DISC	●		●	●			●		●				●	●		●					●			●	
EP3 INFO	●	●								●	●							●				●		●	
ERTH		●					●				●					●		●			●			●	
ETNA				●					●	●			●			●			●	●			●		
EUREKA	●	●	●	●	●	●	●	●	●	●		●				●		●		●				●	
EUROWIN				●								●						●		●				●	
GC					●						●				●		●				●			●	
HCT					●						●							●	●	●				●	
ICARUS				●									●		●					●				●	
ICRAF-MTSD			●		●		●				●				●						●			●	
IETD		●			●				●				●	●				●			●			●	
JEMU DATA		●	●	●	●		●		●	●			●			●				●				●	
LINK	●									●	●							●	●			●			●
NATTA				●									●			●		●			●			●	
REFIS									●	●			●						●			●			●
REN EGY TECH				●						●			●			●						●		●	
REPIDISCA									●			●				●	●				●			●	
SAGE					●								●					●		●				●	
TROPAG							●				●			●		●		●			●			●	
WATERLIT										●	●			●				●			●			●	
Sub Total Cat C	9	11	8	21	10	3	12	3	12	15	14	6	16	9	11	19	4	21	5	8	19	9	4	29	3
Sub Total Cats A,B,C	25	25	17	42	21	11	33	11	26	39	42	11	31	20	27	44	10	63	18	27	46	11	11	70	3

Legend:

Technology:a-air,cp-cleaner production, cnt-construction and engineering, gbl-global, egy-energy, haz-hazardous waste, lan-land and agriculture,nv- noise and vibration, sw- solid waste, w- water

Country: (the country or region from which the technology originates), in -international, re from a specific region, na-national

Dissemination Method (for information) cd-cd rom, dk-diskette, hc-hard copy, mt- metal tape ol-on line, q-query response service,

Cost (cost of information): f-free, c-cost involved, ni-no information

Access (to the information): u-unrestricted, r-restricted, ni-no information

- 19% contained information on noise or vibration protection and abatement,
- 34% contained information on solid waste management,
- 22% contained information on hazardous waste management,
- 53% contained information on energy conservation and alternative and renewable energy supplies (down from 56% in the Stage 1 survey),
- 41% contained information on cleaner production (up from 22% in April 1995 interim report),
- 34% contained information on land and agricultural related technologies,
- 19% contained information on construction, building and engineering technologies,
- 31% contained information on global environment technologies, which include technologies for reduction of greenhouse gas emissions and alternatives to ozone depleting substances.

Geographic Coverage and Language

In terms of geographic coverage, half of the systems (in the combined Categories A, B & C) contained information on technologies collected on an international basis and the other half contained information on technologies originating only from specific countries, groups of countries or regions. Only 14 of the 84 systems identified are located in developing countries currently in the planning or early operation stages. The exceptions are RERIC and ENSICNET based at the Asian Institute of Technology (Thailand); and ASSET and TISGLOW based at the Tata Energy Research Institute (India).

As would be expected most of the systems (81 out of 84) contained information in English. In terms of languages other than English, the breakdown is 10 Spanish, 6 French, 6 German, 3 Chinese, 3 Japanese, 3 Russian, 1 Arabic and 1 Danish (see Table 3.4).

Table 3.4: Systems with Information Available in Languages other then English

System Name (abbreviated)	Languages Ar	Ch	Da	Fr	Ge	Ja	Ru	Sp	Category
Envirotech OnLine		●				●		●	A
EREC								●	A
EREN								●	A
GEM						●			A
IEA Heat Pump								●	A
ISAT				●	●			●	A
RENTEK*			●						A
AGRIS	●			●				●	B
CABI					●		●		B
DTA					●				B
CARIS				●				●	B
HOMS							●	●	B
CEABA					●				C
CES				●				●	C
CISEPI		●							C
CNISEP		●							C
EDF-DOC				●					C
EIDS					●				C
Energy Converv*						●			C
Energy Tech					●				C
HCT						●			C
REPIDISCA								●	C
REFIS*							●		C
Total (A,B,C)	1	3	1	6	6	3	3	10	

Legend:
Ar: Arabic, Ch: Chinese, Da: Danish, Fr: French, Ge: Germany, Ru: Russian, Sp: Spanish
*Systems are not available in English

Information Dissemination Methods

Figure 3.2 presents the information dissemination methods used by the various systems. In this regard, the most significant trend is the increasing use of on-line means of dissemination (75%) through the Internet or other services). In addition, over fifty percent of the systems disseminate information in hard copy or printed form, which is still very important to those who do not have access to on-line services, especially in developing

Figure 3.2: Dissemination Methods of Information Systems

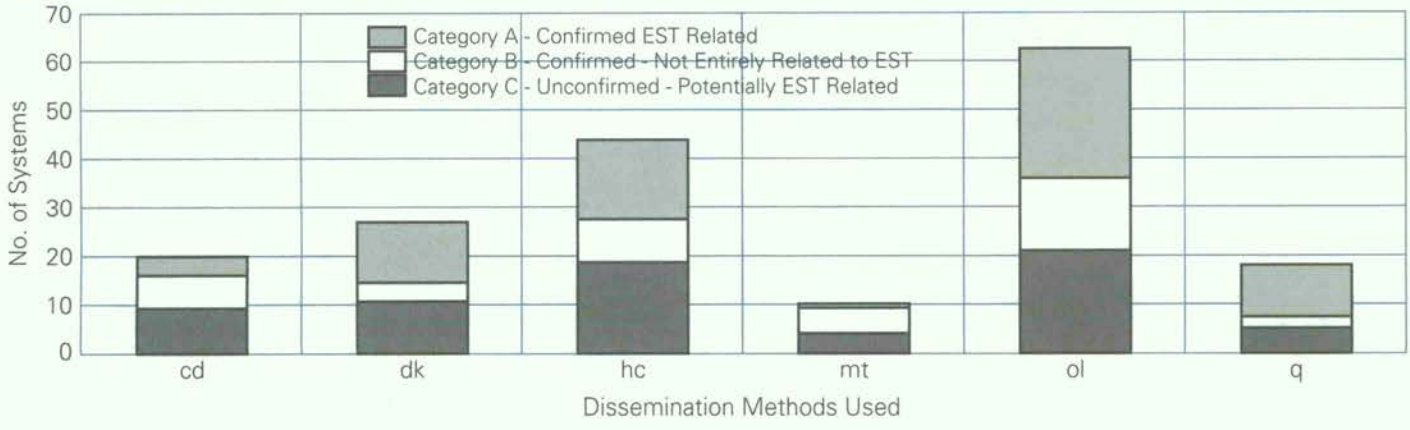


Figure 3.3: Cost of Systems

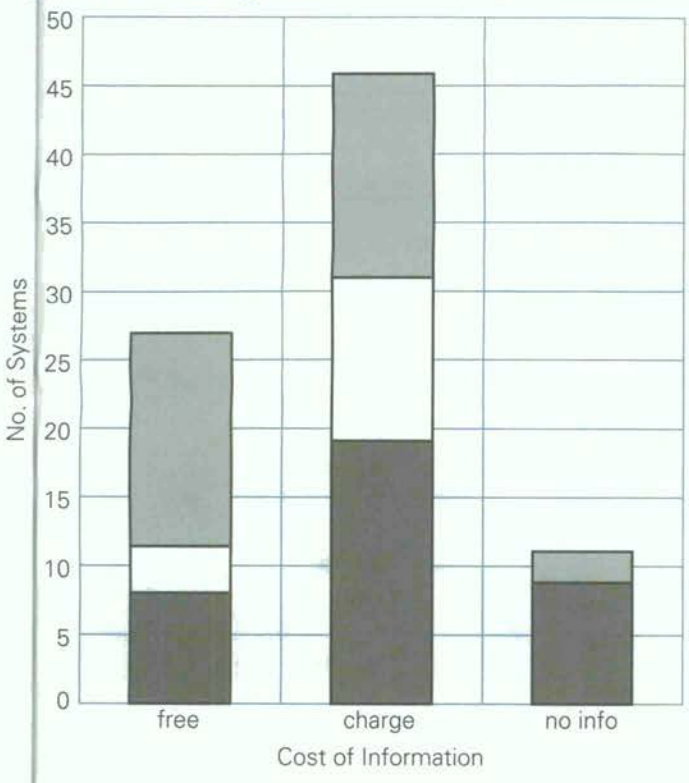
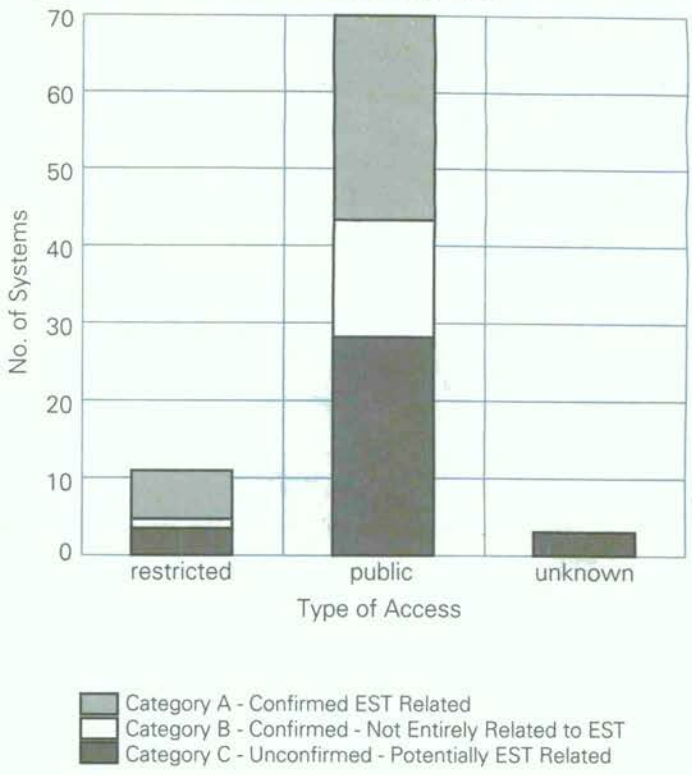


Figure 3.4: Access to Information Systems



countries. Query-response services by phone, fax or mail are probably important to such information users and 18 percent of the systems used this method. Figure 3.2 presents the percentage of information systems (for Categories A,B&C combined) using each dissemination method. This is summarized as 75% on-line, 52% hard copy, 27% diskette, 21% query-response, 20% CD-ROM and 10% magnetic tape. These figures compare Stage 1 results (April 1995) of 41% on-line, 47% hard copy, 24% by diskette, 43% query-response and 8% CD-ROM.

Cost and Access

Figures 3.3 and 3.4 present information on the costs of and access to the systems. This is summarized as follows:

- For 32% of the systems there was no service charge to obtain information. That is, they were free except for Internet, phone or mail charges. This was down from the findings of the April 1995 interim report (39%).
- More than half of the systems (54%) charged for information either through subscription, one-time purchase, lease or a usage charge (35% in April 1995).
- Eighty-two percent of the systems did not restrict access to the information and would provide information to virtually anyone (although many of these charged for the information), up from two thirds in April 1995.
- Fourteen percent of the systems restricted information to particular users (down from 16% in April 1995).

Stages 1 and 2 Surveys

The two stages of the Survey provided differing results as follows:

- A wider spread of EST related information systems were identified in Stage 2 with a shift away from the emphasis on energy and general pollution control as found in the Stage 1 survey.
- There was a dramatic increase in the number of systems disseminating information on-line in Stage 2. This is attributable to the recent growth of the Internet.
- Related to this, the emphasis on "international" information increased. Again the Internet may have an important role to play here as systems try to serve a wider audience.
- The number of systems which charge increased compared to Stage 1 which reflects the fact that more commercial databases have been identified. However, significantly more systems allow unrestricted access which reflects both the commercial nature of the systems and the impact of the Internet. The next chapter examines the performance of eight EST information systems in greater detail and discusses the impact of some of the above-mentioned factors. In future, UNEP's work in this area would involve:

  * confirmation of the information contained in systems in Category C in order to move them either into Category A or B or to delete them from the list, and
  * carrying out additional research into the systems in Category B to better describe the nature and amount of EST related information contained in these systems.
  * continuation of the survey exercise to ensure that systems

Box 3.1:
Information Systems to be Surveyed in Stage 3.

1. **APEC Virtual Centre for Environ-mental Technology Exchange**:
   Developed by Ministry of Inter-national Trade and Industry, Japan.
2. **ATTSW** - Appropriate Technologies for the Treatment of Scheduled Wastes:
   Developed by the Australian Environmental Protection Agency, Australia.
3. **ENERGIE** - energy related literature:
   Developed by FIZ Karlsruhe, Germany.
4. **ESPM** - Environmental Sciences and Pollution Management:
   Developed by Cambridge Scientific Abstracts, USA.
5. **GNET** - Global Network on Environmental Technology:
   Developed by the Global Environmental Technology Foundation, USA.
6. **SEDTEC** - Directory of Contaminated Sediment Removal and Treatment Technologies:
   Developed by the Great Lakes 2000 Cleanup Fund, Canada.
7. **SESAME** - energy technology projects:
   Developed by the Commission of the European Communities, Belgium.
8. **TIFACLINE** - Technology Information System:
   Developed by the Technology Information, Forecasting and Assessment Council, India
9. **VFACTS** - Vendor Field Analytical and Characterization Technologies System:
   Developed by the US Environmental Protection Agency, USA.

not covered to date are identified and incorporated in any future up-date of this report.

A number of interesting information systems which have been identified for survey in Stage 3 are presented in Box 3.1.

INFORMATION SOURCES

The survey obtained details of many information sources related to ESTs. These are also presented in the Catalogue of Environmentally Sound Technology Information Resources. These information sources fall into two categories:

- *EST Institutions* that carry out a wide range of activities related to ESTs.
- *EST Literature* which includes reports and publications on various aspects of ESTs.

The survey identified the following 127 EST related institutions:

- 11 Database Servers (DS) that provide on-line linkages to several EST information systems and databases,
- 5 Database Providers (DP) that market particular EST information databases,
- 17 Export Related Organizations that attempt to develop export opportunities for ESTs from particular countries or regions. This includes:
  * 10 national aid agencies (EXPORT A) with EST related activities, and
  * 7 commercial EST export organizations (EXPORT B).
- 31 International Organizations with EST related programmes including:
  * 7 UN agencies (INTER A), and
  * 14 intergovernmental agencies (INTER B) (such as OECD, IEA and the European Environment Agency, etc).
- 62 Research Institutions and Environmental Technology Centres (RI/ETC) that provide a wide range of EST related services including research, technology development, consulting activities, technology cooperation and networking.

Many of these institutions represent potential partners or participants in future EST information system networking activities. Over 50% of the institution descriptions presented in this report have been verified by the institutions concerned.

The list of EST related literature identified in Part 2 of this report is far from complete since a comprehensive bibliographic search was not carried out in the course of the survey. A future task could develop a more comprehensive survey to identify and annotate the most relevant to EST literature.

Chapter 4 CASE STUDIES

The need for detailed case study work became apparent during the preparation of the April 1995 Interim Report for submission to the CSD. At that time, concerns were raised regarding the quality and usefulness of the information contained in the systems and the relative accessibility for users from developing countries and countries with economies in transition. This chapter presents the findings of eight case studies examined in the preparation of this report. More detailed information on each case study is presented in the Appendices.

When undertaking the case studies the following objectives were applied:

- where possible the information contained in the system should be reviewed;
- quality of the information delivery service should be examined and quality control issues discussed with the system operators
- user-friendliness and the extent to which the system meets the needs of users from developing countries (particularly in terms of cost and accessibility) should be considered.

Assessment of information quality proved more troublesome than anticipated. In particular, it is difficult to ascertain the extent to which information provided by a given system meets specified user needs. Query-response/question and answer services provide an opportunity to circumvent this problem by creating a dialogue between the user and the provider. Through this process, the information system can deliver answers which meet the user needs more precisely. This type of information system can be further enhanced by more widespread dissemination of "generic" information via electronic media which has the additional benefit of raising awareness of the availability of the query-response service.

Eight case studies were selected for detailed examination (see Box 4.1) structured around the themes of agriculture and appropriate technology, cleaner production and technology, general environmental pollution, energy and global environmental problems. Three systems serve the needs of users from developing countries (ICPIC, OAIC and ISAT) while the remainder are targeted at the international community in general or at national user groups. It was considered appropriate that UNEP should present details of its experience with EST information dissemination through two systems - ICPIC and OAIC. The experience of FAO with AGRIS and CARIS was mentioned in the Interim Report as meriting further study.

Box 4.1: Case Studies

1. The International Cleaner Production Information Clearinghouse (ICPIC) was initially established in 1990 by the Cleaner Production Programme at UNEP Industry and Environment.
2. The OzonAction Information Clearinghouse (OAIC) is operated as part of UNEP Industry and Environment's OzonAction Programme.
3. The International Information System for Agricultural Science and Technology (AGRIS) and the Current Agricultural Research Information System (CARIS) were set up in 1975 by the Food and Agriculture Organization (FAO).
4. The Information and Advisory Service on Appropriate Technology is a service of the German aid agency (GTZ). It provides consultancy and information services relating to every aspect of the adaptation and dissemination of technologies.
5. The Japan On-line Information System is an information system covering scientific and technological issues. The system is operated by the Japan Information Center for Science and Technology, and is partly sponsored by Japan's Science and Technology Agency.
6. The Indian Center for Promotion of Cleaner Technology (ICPCT) is currently being established by NEERI (National Environmental Engineering Research Institute) based in India as part of the development of the National Information Centre for Cleaner Technologies (NICCT).
7. Energy Efficiency and Renewable Energy Clearinghouse (EREC) and the Energy Efficiency and Renewable Energy Network (EREN) are operated by the US National Renewable Energy Laboratory. They are sister systems offering clearinghouse and World Wide Web search functions.
8. Greenhouse Gas Technology Information Exchange (GREENTIE) is a new initiative from the International Energy Agency and the OECD. It supports organizations seeking to tackle greenhouse gas related problems by diffusing and exchanging information on technologies. The programme is based on a network of liaison offices throughout the globe.

JOIS represents an interesting case study of the experience of a meta-database system (i.e. providing access to a range of databases). The ISAT case study was selected because of its' emphasis on "*appropriate technology*" and networking in developing countries. The NEERI case study illustrates experience in developing countries with the establishment of new information systems. In the energy field, experience at NREL in the US is particularly interesting with respect to the clearinghouse function of EREC and the networking activities of EREN via the Internet. GREENTIE is an excellent example of the activities of IEA/OECD with respect to global environmental issues and institutional networking.

While it is clear that each information system should be analyzed based on its individual merits and that no hard and fast method can be applied to the assessment, for comparative purposes the approach to the case studies involved the following basic steps. All available information on the case studies collected during the stage one survey work was reviewed and any deficiencies and gaps identified. Key contacts in the organization concerned were approached and lists of questions prepared and submitted. Meetings were then set up with the case study organizations and trial data searches using the system were undertaken, where possible.

The case studies presented in this report could not have been prepared without support from the system developers and operators, who freely provided information and devoted time to discuss the performance of their systems. They also commented on the draft case studies and corrected any inaccuracies. The interpretations presented in this report, however, are those of UNEP. The aim of the case studies has been to provide an objective assessment of system performance. There are, however, two main limitations which need to be taken into consideration.

First, while every effort has been made to search the information systems and identify EST related information, it became apparent very early on that in some instances the information contained in the systems was not necessarily "*packaged*" in a manner that makes the retrieval of relevant information relatively easy. The main concern here is the lack of a suitable thesaurus of terms to describe ESTs in existing databases, which affects the way in which abstractors describe the information they input into the system and the way in which the user retrieves information. Hence, to state that the "only 2% of records in database 'X' appear to be EST related" can disguise the fact that other relevant EST records exist but under different categories such as "clean technology", "alternative energy" and "sustainable agriculture".

Second, one aim of the case studies was to examine the relative user-friendliness from the perspective of potential users in developing countries. This is no simple task and it must be acknowledged that the needs of end-users in developing countries are diverse. Consequently, the analysis presented in the case studies should be considered as indicative.

SYSTEM PERFORMANCE

Organizational Aspects

The case studies cover a variety of organizations including UN agencies such as UNEP (ICPIC and OAIC), and FAO (AGRIS and CARIS) and inter-governmental bodies such as the IEA (GREENTIE). At the national level, governmental bodies, non-profit organizations and research institutes, such as the Japan Information Center for Science and Technology (JICST), the German Information and Advisory Service on Appropriate Technology (GTZ/ISAT), the US National Renewable Energy Laboratory (NREL) and the Indian National Environmental Engineering Research Institute (NEERI) are involved in the development of information systems designed to meet specific needs of the audiences they serve whether in developed or developing countries. The systems are generally operated by a small sub-unit (can be 5 to 10 staff) or as a programme within an organization specifically established with an information dissemination mandate.

Organizations dealing with more general types of information such as JICST and FAO have been involved in the information dissemination business for the longest. The former began operation in 1957 while AGRIS and CARIS were created in 1975. The operation of more specific EST information systems, however, appears to have generally commenced within the last ten years. The ISAT system was set up in 1988. The ICPIC system was donated to UNEP in 1990 and OAIC was launched as an element of the OzonAction Programme in mid-1991. The impetus for the establishment of GREENTIE came from the 1992 Earth Summit and the system began a three year trial period from 1993. Although NEERI has been involved in the development of a cleaner production database, it is only now about to become involved in the establishment of a national information system/network. Many institutions in developing countries may be in a similar position and the survey has shown that two institutions in China are also in the process of establishing EST information systems.

Energy related technologies may be the exception to the rule. The EREC and EREN case study shows that information dissemination in this sector has been on-going for over two decades and may have been given impetus by the energy crisis in the early 1970s. The history of EREC begins in 1976 when the US Department of Housing and Urban Development established a forerunner to EREC - the National Solar Heating and Cooling Information Centre (NSHCIC). This information centre dealt with information referrals on solar energy. The US Department of Energy took over the Centre in 1981, when its focus was widened to include all renewable energy options and energy

conservation. It was consequently renamed the Conservation and Renewable Energy Inquiry and Referral Service (CAREIRS). Three years later the DOE also established the National Appropriate Technology Assistance Service (NATAS) to provide scientific, engineering and small business development assistance related to conserving energy and renewable energy technologies. In January 1993, NREL took over administration of both CAREIRS and NATAS. These two services were consolidated one year later to create EREC. Ten months later, in October 1994, the EREN World Wide Web server was made public via the Internet.

Information Flow

Information flow needs to be understood in terms of the "many to one" and "one to many" relationships. There are many sources from which system operators collect information. Likewise, there are many potential users for each information system. In order to maximize this "one to many relationship", institutional networking plays a key role in the effective operation of the information systems. In this context, the ICPIC system is moving towards an approach to information collection and dissemination based on the activities of six National Cleaner Production Centres, jointly established by UNIDO and UNEP. OAIC operates with support from focal points in around 70 countries and with the guidance of a Technical Options Committee which provides advisory services and quality review of the information collected and compiled by UNEP's OzonAction Programme. The AGRIS/CARIS system operates through a central coordinating facility based at FAO headquarters in Italy. However, information is fed into the system through 171 participating centres. ISAT also increases its efficiency through partnerships with regional networks in Europe, Latin America, East and Southern Africa, West and Central Africa and Asia. Mutually beneficial working relationships are established between ISAT and organizational networks in each region which foster improved information dissemination and in some instances EST development and testing.

JICST, which can be more properly described as a database provider, has established strategic links with institutions in Europe and North America through which it participates in the Science and Technology Network (STN). This approach offers the advantage of providing access to a larger number of databases available through the network. ICPCT, although still in the early stages of development, is also based on the establishment of a network. However, the network will operate within India and is designed to meet the need for cleaner technology. It is possible, however, to envisage links between ICPCT and UNEP's cleaner production database, ICPIC, in the future. In the energy field, the Energy Efficiency and Renewable Energy Network (EREN) is based on the establishment of an electronic network of information systems linked via the Internet. This is commonly referred to as a "Virtual Network". A similar system is developing based around GREENTIE but aimed at promoting technologies to reduce Greenhouse Gases. Special GREENTIE Liaison Groups have been established and the system builds on networks developed over 20 years in the global communication of information on science and technology in the IEA/OECD member countries. The Liaison Groups have the local knowledge needed to identify information sources for Greenhouse Gas mitigation technologies.

Information Contained

The information contained in the systems falls into four key categories. These are: (a) case studies, (b) bibliographies, abstracts and citations, (c) full-text publications and news items, and (d) directories of institutions and experts. None of the case study systems provide a guarantee on the environmental soundness of the technologies that are introduced.

ICPIC includes case studies dealing with the practical application of cleaner production technologies from around the world. This is supported by abstracts of relevant publications and a directory of institutions with cleaner production expertise. The information is collected by specialists from UNEP IE's Cleaner Production Programme and is contributed by partner organizations. OAIC contains abstracts of technical and policy papers relating to the OzonAction Programme. It also includes information on the status of the ratification of the Vienna and Montreal Conventions, contact lists for developing countries, summaries of relevant legislation, details of the ozone protection activities of various international organizations, NGOs and research institutes, industrial associations and individual companies. With respect to ESTs, OAIC presents data sheets excerpted from UNEP IE's source books for technologies applicable to protection of the Ozone Layer and a list of worldwide suppliers of technology and equipment. The information presented in OAIC is mainly derived from developed countries with specific experience in the phase out of Ozone Depleting Substances (ODS). Where available, feedback from developing countries with similar experience is also incorporated into the system

The AGRIS/CARIS system deals with general information on agriculture and research. Information is presented in the form of bibliographic references within which "agricultural pollution" represents 3.8% and "natural resources and environment" some 10.4% of AGRIS's total 2.1 million records. For CARIS the corresponding figures are 0.5% and 5.2% respectively from a total of almost 30,000 records. Searches of these databases revealed only a limited number of records dealing specifically with ESTs. However, this may reflect the fact that EST is not a commonly used descriptor in the thesaurus utilized by these databases. Indeed, this may be a problem faced when searching most information systems and consideration needs to be given on how to foster the wider use of the term "Environmentally

Sound Technologies" and other compatible expressions by information system managers. Many systems are currently applying slightly different terminology. ISAT is a good example of this. The ISAT system uses the term "appropriate technology" defined as "technologies which use local resources with minimum damage to the environment". The system contains extensive information on appropriate technologies related to sustainable agriculture, food processing, building and construction, renewable energy, water supply, organic waste treatment and sewage disposal. The focus of the system is on providing answers to the users' questions based on expert knowledge, internal processing of AT documentation, inclusion of practical project experience and when necessary through the involvement of external experts with a specific sectoral or regional knowledge. The approach is proactive rather than reactive in that it seeks to understand and meet the needs of the user, rather than merely allowing the user to search a database of citations or technology descriptions. The EREC system also follows this model with an emphasis on providing rapid responses to user requests. EREC specialists will put together a package of information based on existing documentation, undertake Internet searches via EREN and carry out research related to renewable energy and energy conservation from mainly USA sources.

JOIS is an on-line information system which provides access to a range of databases covering subjects from general science and technology, physics, chemistry and medicine through to construction and environmental pollution. The information is in bibliographic form and is derived mainly from sources in Japan (58% of all records), USA (17%) and Europe (15%). While JOIS can be considered to contain a relative "wealth" of information, it is a time consuming process to retrieve EST related information. The users are charged for on-line access time and to be truly effective the searches must be focused and short. Therefore, information within this system requires some form of repackaging with a focus on ESTs for it to be effectively used by developing countries. Work is already underway at JICST to remedy this problem with the development of a new database called the JICST Directory System for Earth Science and Technology Information.

ICPCT is moving toward the approach adopted by ICPIC. Currently it includes case studies of practical experience with the application of clean technologies in India. However, when the system goes on-line in late 1996, the opportunity may exist to expand the range of information provided.

GREENTIE currently includes a directory of technology developing institutions from within IEA/OECD countries and is an excellent resource for users interested in Greenhouse Gas control and prevention technologies. As with many of the other systems mentioned above, GREENTIE has recently gone on-line via the Internet where it provides information on the programme and general Greenhouse Gas technology related information. In addition, it provides links to other IEA programmes which are accessible via the Internet.

Users, Accessibility and Costs

From the perspective of users from developing countries and countries with economies in transition, a user-friendly information system would be one which provides good quality information on ESTs at low or virtually no cost and quickly. Unfortunately, none of the information systems examined meet these requirements. High quality information is available and can be packaged to meet the users specific needs but time is required to prepare the information. In some cases, the information is available free of charge for users from developing countries but not in all. Also it is possible to obtain almost instantaneous results from searches if the users have access to the Internet or can afford direct on-line searches via modem. In these situations, there will be costs involved including international telephone charges if the user is accessing a system based in another country.

Some delivery systems such as CD-ROM (AGRIS and CARIS) and diskettes (ICPIC and OAIC) offer the greatest value for money in terms of the range and quality of information contained. However, in this rapidly changing field, the information they contain can quickly become out-dated. In this context, it is apparent that user-friendliness may remain an elusive goal in the short to medium term without some form of collaborative measures between system operators to bring about more effective information delivery specifically for users in developing countries.

The existing users of EST information systems vary from officials in international and national agencies involved with environmental and technology issues to representatives from NGOs, research institutes and universities, industrial associations and private companies. Some systems such as ISAT and EREC/EREN have a large constituency with estimates of around 2,000-3,000 customers using the former and 60,000 using the latter annually. Interestingly, both systems are also accessible via the Internet. Other systems such as ICPIC and GREENTIE have had fewer users in the past and hence both systems have recently gone on-line via the Internet which will increase their accessibility for users from developed countries and via intermediary organizations in developing countries.

AGRIS/CARIS and the JOIS are by far the most extensively accessible. The former can be accessed through a range of media including on-line and CD-ROM. Moreover, the databases can be accessed through the AGRIS/CARIS participating centres and through a number of commercial database providers if the user is willing to pay the appropriate charges. JOIS is accessible via a number of outlets in Japan and certain databases are

available on STN. However, users are charged for on-line log-on costs and for downloading abstracts. These arrangements mean that the information contained on these systems is inaccessible to users from developing countries because of the costs involved. It may be worthwhile investigating measures by which users can obtain access to EST related information at a reduced cost.

UNEP IE's OAIC database is interesting because it is available on diskette and will soon be accessible via the Internet. The choice of diskette dissemination was deliberate in order to ensure widespread dissemination in developing countries. The diskette version is updated twice annually and installation is relatively straightforward. The GREENTIE directory is also available in diskette form and can be searched directly on the Internet.

TRENDS

Considerable progress has been made in recent years with the dissemination of information relevant to ESTs and information system managers recognize the advantages of networking activities and strategic alliances with respect to information collection and dissemination. However, in terms of actual EST information, most systems do not provide precise answers to user questions. A user cannot ask the systems for details of a specific technology nor expect a concise answer. Rather it would appear that the systems provide the users with useful references to potentially relevant literature and also a list of contacts which the user can then follow-up. In some cases, the user may find case studies dealing with the practical application of certain technologies but would be required to interpret them in the context of their transferability to local conditions.

From the range of services available via the systems examined, the query response service appears to offer the highest potential with respect to meeting the need of users in developing countries. With this service, information specialists will work with the users to clarify their needs and will put together a package of relevant information dealing with the topic under consideration. This approach has the drawback, however, of being resource and time-consuming but should prove likely to produce better quality information. Direct on-line searching can now be undertaken relatively easily. However, the user of the information system must be very clear about what they are searching for and, when on-line charges are involved, it is better to search with the assistance of an information specialist. Failure to do so can produce poor search results and high connection charges.

There appears to be a shift toward the adoption of information dissemination via the Internet and other on-line media. Four of the case studies have recently set up homepages on the Internet. Although this increases the "*visibility*" of the system within the developed world, it is unclear whether they will become more accessible to developing countries.

Practical experience with EST information systems suggests that users in developing countries would do well to rely on so-called "intermediary organizations" which have the capability to clarify user needs, search a range of EST information systems, contact organizations with direct experience of the ESTs under consideration and then package the information retrieved in a form which meets the requirements of the user and the locality. Direct searching by the users may be frustrating as they may find it both resource and time-consuming. No one system appears to hold all the answers and individual users face a number of barriers which need to be overcome before their needs will be met more effectively. These barriers are discussed in more detail in the next chapter which deals with the findings of the UNEP sponsored expert meeting on EST information systems which was held in Paris in 1995.

Chapter 5 THE EXPERT'S VIEW

On 9-11 October 1995, UNEP held an Expert Meeting in Paris that was designed to evaluate:

- existing and planned systems for providing information on environmentally sound technologies from the perspective of coverage, quality of information, cost and accessibility;
- the needs and requirements of potential users of such information, especially users from developing countries and countries in transition; and
- the idea of a broadly based consultative mechanism to facilitate communication and exchange of information among information providers and potential users.

The Meeting was attended by 51 participants from 24 countries, the European Commission, representatives from the UN agencies, and representatives from business, non-governmental and academic organizations. The meeting was organized into a series of panels, in which the participants addressed a set of questions on the following topics:

- Information Systems to Support Major International Environmental Agreements,
- Assessment of User Needs,
- Evaluation of Existing Information Systems,
- The Need for a Consultative Mechanism.

INFORMATION SYSTEMS TO SUPPORT MAJOR INTERNATIONAL ENVIRONMENTAL AGREEMENTS

This part of the meeting focussed on information systems in place to facilitate the transfer of ESTs in support of the provisions of three major international environmental agreements: the Basel Convention on the Control of Transboundary Movement of Hazardous Wastes and their Disposal; the Framework Convention on Climate Change; and the Montreal Protocol on Substances that Deplete the Ozone Layer. Presentations were given by representatives of each agreement.

In the case of the Basel Convention, the Parties submit reports annually about their methods of managing hazardous waste. The information covers all waste management options such as landfill, incineration and recycling. Governments, planning bodies, institutions and industries dealing with the treatment and disposal would find this information useful in making informed choices about the most appropriate methods of waste management available. The Convention Secretariat is setting up a database to make access to the information easier. The Secretariat is also working with other international organizations to make their databases available through the Basel Convention regional centres.

Under the Framework Convention on Climate Change, Annex 1 Parties are required to make an inventory of their greenhouse gas emissions, and to formulate National Communications (plans) on policies and measures to return their greenhouse gas emissions to 1990 levels. At the 1st Conference of the Parties in Berlin in April 1995, the Secretariat was requested to make an assessment of available technologies prior to the next Conference of the Parties. In order to effect policies to meet their commitments under the Convention or within National Communications, central and local governments, policy analysts, industry, universities, environmental groups and community level managers need information on ESTs. Consequently the Convention Secretariat is working with GREENTIE and national systems to develop more comprehensive information sources.

The Montreal Protocol on Substances that Deplete the Ozone Layer established a Multilateral Fund to provide technical and financial assistance to developing countries for the phase out of ozone depleting substances (ODS). One part of this mandate includes the provision of an information clearinghouse function, which is carried out through UNEP IE's OzonAction Programme. The elements of the programme include a query response service, a diskette database system, publications, training courses and assistance with devising national phase-out strategies. All of these activities are supported by a Multilateral Fund, the financial mechanism designed to support the Montreal Protocol. A number of dedicated national and regional information databases exist. The users of these databases range from the National Ozone Units which were set up to deal with ODS replacement at country level, to industry managers, technical associations, policy makers, non-governmental organizations (NGOs) and the public.

A number of issues in relation to all three Agreements were expressed by participants. It was argued that information systems should be decentralized to allow better local access and greater focus on local geographical needs. This function could be provided by local intermediaries who would liaise with the technology end-users. Such end-users, especially those in developing countries need information about the costs, benefits, successes and failures of technologies. Since many developing countries do not have access to sophisticated databases, they would benefit from a dialogue about the use of ESTs with other developing countries. North-South and South-South collaborative networks would encourage such a dialogue and would potentially further the spread of the use of indigenous technologies.

ASSESSMENT OF USER NEEDS

The meeting also explored the information requirements of database users. Two types of users were identified:

- technology users such as industries, government planners and policy makers, project developers or others who make or influence decisions about technology selection or imports; and
- information intermediaries who assist the technology users with needs assessment, database searches, analysis and

assessment of technological options, and help in the selection and tailoring of technologies to meet local or site specific conditions. These intermediaries can be university research centres, training institutions, consulting firms, governmental agencies, NGOs and environmental organizations.

It was maintained that the user needs depend on whether they are the final technology users seeking advice about technology to be installed, or whether they are the information intermediaries who consult databases to find information to advise final technology users. When technology users seek information about potential technological or management improvements, they need to be directed at the earliest stage to the relevant sources of information about appropriate ESTs. In making this first step, technology users often make initial contact with an information intermediary.

Information Intermediary

An intermediary's role in the exchange of EST information was repeatedly cited as being crucial to successful technological cooperation, especially between developed and developing countries. The intermediary is responsible for passing on relevant information derived from EST information systems which are most often located in developed countries. Industries in developing countries are often unsure of the questions they need to ask in relation to obtaining more environmentally sound technologies. The intermediary has to analyze the technology user's needs, and then seek and provide information on technological or management issues. The intermediary can also provide "added value" to the raw information from a database by interpreting how it might apply to the local circumstances. Intermediaries can also play a significant role as facilitator of contacts between EST supply and users who can then form partnerships and joint ventures.

The information intermediary can serve a marketing function to improve awareness of the environmental and economic benefits of ESTs through awareness-raising seminars, training courses and by publishing case studies and demonstration projects.

It is also important for technology users to know about cases where ESTs have failed. This information should include the circumstances of the failure, and whether the technology failed because of its inappropriateness in that environment, or because of lack of training, etc. Documentation and analysis of such failures could be carried out by intermediaries.

Dissemination Media

The meeting participants' experiences of using various information dissemination media (Internet, CD-ROMs, diskettes, printed material, etc.) showed that each media can fulfill a particular need and that there is no single media which is superior to others in all instances. Conventional information dissemination methods that were found useful included: personal contact with an intermediary, brochures which give brief technology descriptions, lists of a contact names and telephone numbers, newsletters, publications containing demonstration projects, case studies, seminars and training courses.

Electronic information exchange mechanisms such as diskettes, magnetic tape, CD-ROM and the Internet offer very fast access to up-to-date information and are of increasing importance. However, it was anticipated that the more traditional paper-based media will continue to meet a range of needs. While the Internet is widely available and useful to technology suppliers, users and governments in developed countries, many developing countries are not yet fully integrated or linked to the Internet and continue to rely on other media. In developing countries an intermediary might be able to link to the Internet through a local university or research institute.

CD-ROMs are often used in universities in developing countries, where the Internet is not yet available. It is easy to use and information can be exchanged in a very attractive format (including images and graphics). CD-ROMs, however, are expensive to produce and cannot be updated.

E-mail was suggested as a system which might be useful for networking in developing countries with inadequate access to the Internet. For example, in Latin America intermediaries from several countries have networked by e-mail for six months on urban environmental issues, and built up a comprehensive database on waste-disposal sites in the region.

Access Barriers

Access to information about ESTs was reported to be difficult both for intermediaries and EST end-users for a number of reasons. Many databases and the predominant amount of printed materials on ESTs are available only in English. Another role for a locally-based intermediary can be to translate the information into the indigenous language. Lack of training on the use of software can be a barrier to the use of an electronic database, so that access to a computer terminal does not always mean access to appropriate data.

Cost of information including cost of access to a database can be another barrier to information on ESTs. Many meeting participants argued that EST information be available free of charge at the initial stage, when an intermediary is seeking to raise awareness of ESTs among potential end-users in a developing country.

EVALUATION OF EXISTING INFORMATION SYSTEMS

Operators of several EST information systems outlined how their systems operated, who the users were, what information was in

place and gave details on access and cost.

Three of the presentations covered the databases established by the International Energy Agency (IEA) and Organization for Economic Cooperation and Development (OECD), which focus on the energy sector. These information systems operate under the IEA Technology Collaboration Programme which is a series of forty bilateral Agreements between participating countries, who exchange information on technologies, country regulations and policies. Participating countries provide the necessary resources as a part of the Collaborative Programme either in cash or by sharing tasks, and these costs may potentially discourage developing country membership. Most participants in the programme are from developed countries.

The IEA/OECD Greenhouse Gas Technology Information Exchange (GREENTIE) aims to facilitate the transfer of greenhouse gas technology, in line with the Intergovernmental Panel on Climate Change (IPCC) list of 105 technologies. GREENTIE provides an enquiry service, a printed directory, CD-ROM and Internet access. It is linked to a number of other databases, and is on-line via several international organizations. Participating governments pay the costs of operating the service as well as identifying national centres of expertise and submitting this information to the database.

The other two IEA/OECD information systems are the CADDET (Centre for the Analysis and Dissemination of Demonstrated Energy Technologies) systems covering energy conservation and renewable energy technologies. Each is organized around a Centre and has a supporting system of National Teams (in the Netherlands for conservation and the UK for renewable energy). The National Teams function as intermediaries who are valuable local contacts for companies seeking EST information. The CADDET databases cover the economic advantages of a technology, the state of the market, the environmental benefits and non-technical barriers. In addition, technical brochures and a quarterly newsletter are produced. CADDET is financed by participating countries who fund the National Teams and the Centre. Access to the information is free.

Two information systems related to industrial pollution and cleaner production were presented. The UNEP International Cleaner Production Information Clearinghouse (ICPIC) disseminates information about cleaner production measures. The database contains contacts for cleaner production experts and institutions, a wide range of case studies, and publications lists. ICPIC is supported financially by developed country governments and is linked to a number of other international organizations. It is free in diskette form. The second information system dealing with cleaner production is the RENTEK system developed by the Danish EPA. This system, which is only available in Danish, provides a guide to ESTs with a focus on small Danish industries. In a recent review of their system, Denmark found that disseminating information on ESTs is most effective if industry's normal channels of communication are used.

A number of participants gave presentations about the environmental information systems available in their countries. The Russian Ecological Federal Information Agency (REFIA) operates a database through a system called "TV-ECOINFORM". The system is based on an existing television network which the user accesses through a special receiver. The information is then transmitted to the computer. The system is fairly cheap to run. Approximately 200 user points have been created at all the Environment Ministry territorial bodies, and an experimental series of user points have been established around Moscow.

India has established an Environmental Information System (ENVIS) for policy planners, scientists and engineers throughout the country. It is a decentralized system with a network of subject-oriented centres, and has developed a database on cleaner production with over fifty case studies. ENVIS is also the Regional INFOTERRA service centre for South Asia.

China's Association of Environmental Protection Industry (CAEPI) is seeking to establish a wide network of end-users, linking Ministries and provincial databases to a national system which in itself would be linked to international databases. There is considerable environmental information at provincial and district level but this needs to be retrieved into a national network. China is seeking external funding to establish the system.

Vietnam has a national network, and is seeking technical and financial support to develop an EST database and to link it to relevant international databases.

Poland's Institute of Environmental Protection has no existing information system covering ESTs. As a result of Poland's new environmental laws and standards (including obligatory environmental audits) those industries which supply or use ESTs are emphasizing the environmental and economic advantages of these technologies, thus encouraging other industries to adopt them.

Jamaica's Conservation Authority has built up a close relationship with the University of the West Indies and they exchange information and provide each other with mutual support.

Lebanon has a very limited computerized information system on ESTs and lacks local research centres. Experience has shown that the ESTs offered by developed countries are rarely applicable in poor rural communities. Here the real needs are for basic sanitation, food production, alternative agricultural practices, and afforestation. Rural communities have labour resources but are unable to afford capital items.

These presentations illustrated the wide range of information systems available and under development. In the discussions that followed it was pointed out that while information

intermediaries cannot be expected to have access to all databases, they certainly need to know the range of databases available and the type of information they contain. Therefore the intermediaries would benefit from strategic alliances among themselves, perhaps formed on a regional basis, to share knowledge of the information systems and databases. A number of participants also suggested that a regular update of the UNEP EST Information System Survey, with free access to the catalogue of information systems and databases, would in itself be a very useful service for those seeking information on ESTs.

NEED FOR A CONSULTATIVE MECHANISM

There was general agreement among the participants that the presentations and discussions had revealed a gap in the ability of interested parties to know about and to be able to access all available information systems and databases relating to ESTs. Intermediaries would be able to do a better job in advising enterprises in developing countries about ESTs, if they knew the range of information systems available and the information that they contained. A "consultative mechanism" could well help bridge this gap, and enable intermediaries to cross-refer to other, perhaps unfamiliar, databases and to consult other intermediaries in order to share experiences and knowledge which would be useful to their clients.

Having listened to the discussions and presentations, UNEP put forward a proposal for the possible components of a consultative mechanism to take forward the work of the Survey of Information Systems on ESTs and respond to the needs expressed. The following activities were generally endorsed by the participants and judged to be helpful.

Continuation of the UNEP Survey of Information Systems on ESTs

The current Survey will continue with direct questionnaire surveys, Internet searches, and review of publications. UNEP proposed to develop and maintain a catalogue of EST related information systems, which could be made publicly available in printed form on diskette and/or through the Internet. Participants felt that a continually updated survey of information systems would be extremely useful for information users. Information intermediaries and technology users would be able to use the results of the survey to identify information systems and search them for information on ESTs.

User Needs Assessment

Further assessment is necessary of the information needs of both information intermediaries and technology users. The Meeting itself represented a first step in that assessment as it brought to light the crucial role of the intermediary as both information seeker and provider. A User Needs Assessment should look at the following:

- intermediaries in developing countries: who they are, how they operate, what type of databases they can access (electronic or not) and what their information needs are; and
- technology users' needs. Ultimately governments and industry need EST information to make choices which affect the environment. The Assessment could consider ways of improving communication between the end-users and the information providers.

It was noted that user needs assessments have already been carried out by other organizations and that UNEP should seek to take advantage of this work. A market survey carried out by CADDET could also be a useful starting point.

Case Studies

It was agreed that case studies would form valuable part of UNEP's on-going activities, including those of information intermediaries. Also case studies of developing country experiences using existing EST information systems could be very revealing.

Networking with Other Centres

Many environmentally focussed centres already exist which could possibly be used as EST information centres. These include the National Cleaner Production Centres, Basel Convention Centres, INFOTERRA focal points, UNEP IE and IETC, regional and national technology centres such as CADDET, academic research centres, commercial information providers and trade associations. Some of these may need particular help in accessing the EST information network. Use of such a wide range of additional centres would provide a multiplicity of new access points at local level. There is also a need for information exchange among centres. In this case strategic alliances are important between the operating personnel. The proposed consultative mechanism could assist in this by promoting a collaborative network of centres, which could cooperate in research and information exchange. It was felt that industry and the academic sector could make a positive contribution to the centres and should be encouraged to participate in the networking. North-South and South-South collaborative networks should also be fostered, especially to encourage the dissemination of indigenous environmental technologies.

Chapter 6 BUILDING BRIDGES

There was general consensus at the Paris expert meeting held in October 1995 in favor of the establishment of a consultative mechanism, in the form of an EST information system network, which would provide the opportunity for a range of organizations and individuals to share experiences on how the impact and effectiveness of information dissemination initiatives and policies could be measured and improved. This mechanism would enhance communication and cooperation between systems, and between technology users, technology providers or suppliers and facilitators such as information intermediaries. The consultative mechanism would involve a network of institutions which use and supply information on ESTs and would promote a "decentralized" approach based on a "multiplicity of access points" in order to share experience, knowledge and expertise with respect to EST information system operation and information dissemination.

The UNEP 1996-1997 Programme of Work issued by the Executive Director in November 1995 provides for the establishment of the "Consultative Mechanism" and for a range of activities to provide targeted information on environmentally sound technologies to industry and national and local authorities and to develop and disseminate tools for technology selection by decision-makers taking into account the environmental impact.

The desired results as stated in the Programme of Work include improved access to information on environmentally sound industrial technologies and technologies for urban and water management as shown in Box 6.1.

INSTITUTIONAL FRAMEWORK

To coordinate and structure the activities in this area, in June of 1996 UNEP established the Environmentally Sound Technology Information Network Programme. This programme is a cooperative effort between UNEP Industry and Environment in France, UNEP International Environmental Technology Centre in Japan, and UNEP INFOTERRA in Nairobi. The importance of establishing an EST Network was endorsed by the CSD at its fourth session in April 1996.

The basic framework for this Programme begins with the three UNEP offices, and their collaborative partners in regional and sectoral terms. The Director of UNEP IE has been nominated as Programme Chair, with the Directors of IETC and INFOTERRA effectively functioning as Vice-Chairs. Through a collaborative effort, UNEP would:

(a) Carry out planning and implementation of the activities described below including publication of reports.
(b) Establish, maintain and service a network of organizations involved as providers, intermediaries and users of EST information.
(c) Organize an expert forum to discuss the findings of this survey work and plan networking activities.
(d) Continue to report the findings of the work to the CSD.

UNEP is developing this Programme for the following reasons.

(a) There is recognition of the importance of better EST information collection and dissemination from international forums and conferences.
(b) UNEP has significant experience with various information dissemination mechanisms and delivery systems through the activities of INFOTERRA, GRID, OzonAction and ICPIC. UNEP has a unique catalyst role in this area.
(c) The Programme will provide significant opportunities for integrated implementation within UNEP, and if the significance is more widely understood could grow into a cross UN initiative with considerable opportunities for public/private partnership in line with CSD priorities.

Measures would be taken to encourage the involvement of a wide range of EST related institutions and networks in this mechanism through dissemination of information of the results

Box 6.1: Outputs from the Programme of Work

1. Establishing the Consultative Mechanism for EST information systems and issuing a Report to fifth session of the CSD in April 1997.
2. Continuing and updating the survey and database on information systems related to EST.
3. Preparing a series of publications reports and manuals to support the use of ESTs including:
   a. Guidelines for environmental information that exporters of technologies should provide importers,
   b. Environmental Technology Assessment reports and manuals,
   c. Regional source books on alternative technologies for freshwater augmentation,
   d. A source book on environmentally sound technologies for municipal solid waste management,
   e. Training materials and workshop evaluation reports for the use of ESTs,
4. Preparing a database on ESTs related to urban and freshwater environment and development of a cumulative index of scientific and technical abstracts on ESTs.

of the work undertaken, invitations for their participation in workshops and expert meetings to share experiences and knowledge, and by encouraging them to initiate and evaluate their own EST related information dissemination activities.

A PLAN OF ACTION

The Environmentally Sound Technology Information Network Programme consists of five main tasks which will be implemented in an integrated manner. The rationale behind these tasks can be explained simply as follows. First, there is a need to understand the current state of EST information dissemination and collection throughout the world. This would be achieved through continuation of on-going survey work. Second, there is a need to create links, foster communication and collaboration between existing organizations involved with all aspects of EST. The establishment of an EST Network would appear to be the most appropriate means by which to attain this goal. Third, those institutions with considerable successful experience with EST information dissemination and practical experience with the development, adoption, adaption and application of ESTs should be encouraged to share that experience more widely. The establishment of an Expert Forum would be an essential tool by which this goal can be attained. Fourth, objective information on specific environmentally sound technologies is required in order to offer decision-makers a wider range of technology choices and also techniques by which they can select and appraise technologies. Creation of an EST Directory/Database accessible via the Internet and disseminated via diskette represents an effective way in which to provide this unique service. Finally, contextual information is required by decision-makers on scientific and technical aspects of particular ESTs so that they can understand the wider implications of the technologies. At present, much of this information is already available in existing scientific papers and accessible via a wide range of databases generally in developed countries. A tool is required in order to collate this information in one source and to disseminate the information to decision-makers in developing countries.

Each task is elaborated further below:

Continuation and Update of the Survey

The current survey would be used as the start of a biennial updated catalogue of EST related information systems, which would be made publicly available in printed form, on diskette and through the Internet. UNEP would regularly update the survey of organizations involved in EST information dissemination in a targeted manner involving direct questionnaire surveys, Internet searches and requests for information and views from intermediaries, system operators and end users particularly those in developing countries and countries in economic transition. It is believed that a periodically updated survey of information systems would be extremely useful for information users. Information and technology users would be able to use the results of the survey to identify information systems and search them for information on ESTs. The results of the survey are already available on-line via the UNEP IETC homepage (URL: *http://www.unep.or.jp/*). A virtual electronic network of on-line EST information systems is also under development using the Internet linked to the homepages of UNEP IE and UNEP IETC.

The actual descriptions of the information systems presented in the catalogue would be subject to regular review according to the approach presented in Box 6.2.

Box 6.2:

Reviewing the Information System Descriptions

Category A Systems: mainly EST related information.

Proposal:

- Improve the quality of the system description in the catalogue.
- Improve access to the EST information by linking the systems electronically or by devising a mechanism to collect/exchange information (eg. descriptions of ESTs).

Category B Systems: contain reference to ESTs but sub-element of main information topic.

Proposal:

- Remove system description from the catalogue or find some way to access/collect the EST information contained into one database.

Category C Systems: may contain EST information but unsure to what degree.

Proposal:

Move to either A or B by:

- Verifying the quality of the system description.
- Undertaking detailed case studies to determine extent of EST information contained.
- Gaining first hand experience in use of the system.

Creating an EST Information Network

Many environmentally focussed centres already exist which could possibly be used as EST information centres. Creating links among such a wide range of additional centres would provide a multiplicity of new access points at national level.

There is also a need for information exchange among centres. In this case strategic alliances are important between the operating personnel. The proposed EST Information System Network would assist in this by promoting a collaborative network of centres, which could cooperate in research and information exchange. Industry and the academic sector could make a positive contribution to the centres and should be encouraged to participate in the network. North-South and South-South collaborative networks should also be fostered, especially to encourage the dissemination of indigenous environmental technologies.

Any network must focus on human interaction and communication. Consequently, networking activities between individuals and institutions in developing countries would need to be encouraged in order to foster increased South-South collaboration on technology transfer. A number of such networks already exist such as the Mechanism for Exchange of Technology Information (METI) which was established by Asian and Pacific Centre for Technology Transfer (APCTT) and others linked to ISAT-GTZ. Existing networks should be reinforced. Key contacts in these networks would need to be identified and encouraged to function as focal points to help coordinate the dissemination of EST related information.

Expert Forum

A forum on EST information systems would be held in the form of an expert meeting in the 1997-1998 time frame to review work undertaken and to identify strategic future directions for work and implementation actions. Consideration could be given to existing and future networking strategies to link people, systems and organizations involved in EST information dissemination and use. The forum would be the basis for discussing and developing collaborative efforts in the following areas:

-User Needs Assessment

This includes assessment of the information needs of both technology users and the intermediaries (such as environmental technology centres and research institutions) that often assist technology users, with a particular emphasis on developing countries. The Assessment should consider ways of improving communication between the end-users and the information providers. Through the Network, the opportunity exists to learn from experiences of organizations which have already completed, or been involved with, user needs assessments and to benefit from the lessons learned.

-Case Studies

This could include in-depth studies of existing or new information systems, case studies of information intermediaries as well as case studies of developing country experiences using existing EST information systems.

-Benchmarking EST Information Systems

The forum could explore the desirability of carrying out a bench-marking study to evaluate existing EST information systems and provide an outline of best practice in EST information system development and operation. This would allow preparation and dissemination of materials to EST information system operators on how best to improve system performance, on bench-marking in terms of information contained, on quality control with respect to the "environmental soundness" of information disseminated and would improve the relative utility to end-users. Through this study it may be possible to provide guidelines on "model" approaches to EST information system development and operation from a developing country perspective.

Electronic Directory of Environmentally Sound Technologies

UNEP IETC, in collaboration with its supporting foundations, the Global Environment Centre (GEC) and the International Lake Environment Committee (ILEC), has developed an electronic directory/database in order to ensure the comprehensive/systematic collection and dissemination of objective, targeted and quality-assured information on environmentally sound technologies (ESTs) related to environmental management of large cities and to freshwater lakes and reservoirs. Establishment of this globally accessible directory/database to promote the transfer and adoption of ESTs tangibly furthers the goals for which IETC was founded. In particular, the directory includes:

- Descriptions of EST related institutions.
- Descriptions of individual sources of information on ESTs.
- Technology Descriptions - Details of individual environmentally sound technologies: e.g. water aeration systems, pulse bed activated carbon adsorption systems, denitrification units, etc.
- Case Studies - These represent value-added information on EST performance and practical experience with their application. These will be collected through a number of on-going IETC activities including training and survey projects such as the on-going regional surveys of freshwater augmentation.
- Environmental Monitoring Equipment - Information on equipment can be divided into the principles behind the actual operation of environmental monitoring devices and technical descriptions of actual products. This information is available from scientific papers, directories and export promotion reports, as well as directly from the manufacturers themselves.

The information contained in this electronic directory will be accessible via the Internet and also disseminated on diskette specifically for users in developing countries.

Access to Citations and Papers Containing Technical and Scientific Information on ESTs

The UNEP survey of information systems related to environmentally sound technologies identified a number of databases such as Pollution Abstracts, ENVIROLINE, TOXLINE and COMPENDEX which contain citations and abstracts related to various aspects of environmentally sound technologies. This information tends to represent a relatively small percentage of all records within the database. Consequently, retrieval of EST related records can be a time consuming process for the interested users. In order to extract these citations and abstracts, IETC has designed a project which will "trawl" the database, pull-out EST related material and package these citations in a printed index and in-house purpose built database. This index would then be disseminated to readers in developing countries and countries with economies in transition. The printed index would be supported by a document delivery service which would provide the readers with "hard copy" versions of the original reports and articles. Numerous studies in the past have shown that "hard copy" remains an important dissemination medium for developing countries. The citations and abstracts will cover issues relating to large cities, freshwater lakes and reservoir basins, including technology management, logistics and policy; legislation, regulations and enforcement; pollution control; transport (commercial, public, and private); tourism; town planning, megacities, over-population, and slum area issues; sanitation, water supply, solid waste management, recycling, and air pollution; and primary and alternative sources of energy.

PART II

CATALOGUE OF ENVIRONMENTALLY SOUND TECHNOLOGIES INFORMATION RESOURCES

Chapter 7 HOW TO USE THIS CATALOGUE

This catalogue includes descriptions of 84 information systems and 127 institutions. Key terms used to describe the systems are introduced together with brief definitions. Each system is presented on a separate page and where possible complete information has been provided. However, institutional and personnel changes are quite frequent and it is anticipated that contact details can quickly become outdated and hence the need for regular surveys to ensure the information remains current. The reader is kindly requested, however, to bring any changes, errors or new information, to the attention of the authors of the report.

The institutions presented deal with a range of issues related to environmentally sound technology including policy-making, regulation, research, training, information system operation and database development, technology transfer and export. They have been divided into six categories:

INTER A: UN International Agencies (UNEP, UNDP, World Bank, etc);
INTER B: Intergovernmental Agencies (IEA, OECD, etc);
EXPORT A: Technology Transfer/Export Oriented Public Bodies (mainly national aid agencies);
EXPORT B: Technology Transfer/Export Oriented Commercial Entities;
RI/ETC: Research Institutes/Environmental Technology Centres;
DP Database Providers;
DS: Database Servers.

Many of these institutions were covered in the questionnaire survey. Others were identified through a survey of the Internet. Over 50 of them responded to a verification check carried out in February 1996, confirming that the institutional description is accurate. It is appreciated that this list is by no means exhaustive and that there are many other institutions involved with various aspects of environmentally sound technology. However, it is the first list dealing with EST institutions and provides a useful basis for future work. It is also likely that many of the institutions presented will be interested in participating, whether actively or passively, in some form of networking activity related to the dissemination of EST information and UNEP is keen to explore possible opportunities for further collaboration.

CATEGORIZATION OF EST INFORMATION RESOURCES

In Chapter 2 of this report, EST information resources were divided into three groups.

- Information systems include primarily computerized systems for collecting, compiling, organizing and managing databases containing information relating to ESTs. These systems provide the users with the opportunity to undertake searches directly or through an information intermediary. The term EST information systems presented in this report includes sites accessible via the World Wide Web (WWW), on-line host computer and bulletin board systems, clearing houses and databases.
- Institutions provide access to policy, research and training programmes relating to ESTs and information dissemination. Where available, the homepage addresses of the institutions are provided and key sub-units are identified. Database providers are included within this category.
- Information sources include reports, articles, and studies containing data, test results and information.

Whether accessible directly by modem, via the Internet or via BBS, on-line information systems offer access to bibliographic, scientific and business databases, with retrieval by subject, title, author, or key words. As mentioned in Chapter 4, a growing number of these systems are accessible via the Internet. The Internet is the world's largest computer network and offers an array of services from email to remote logins to database access. Increasingly other networks such as Fidonet and Bitnet are being connected to the Internet via computers called"Gateways". It allows relatively inexpensive or free searching of an extensive range of information systems and databases available via sites connected to the Internet. Many institutions have set up servers which host the "homepage" of the institution. This homepage often includes a description of the institution and can also provide access to information services and databases. Where available, the Uniform Resource Locators (URLs) - the Internet addresses - of EST related information systems and institutions are provided in this report.

The other common form of on-line service is a Bulletin Board System (BBS). A BBS is a software programme which accepts user log-on via modem/telephone line connection and provides services such as email, distributed conferencing, databases access, file transfer, and on-line communication. In most instance a password is required but users may log-on as guests. Where available, the telephone numbers for EST related BBSes are included in Chapter 8 of this report.

Clearing houses are another widely used method on information dissemination. These entities facilitate networking, query-response services and the exchange of critical information. Many clearing houses use BBSes and/or hotlines (sometimes toll-free) to provide convenient access for remote users. Clearing houses are useful as central access points for technical reports and documents. They may operate a query-response system and provide access through specialists to databases.

The Internet, BBSes and clearinghouse systems all provide access to databases. The majority of databases began as either abstract journals or as simple card files. With the advent of computer typesetting in the 1960s, the contents of these journals or card files were keyed into computers. The information was made available in digital form and soon transformed into

databases. In order to improve the retrieval of information in the database, certain software tools and search languages developed, and the key elements of the modern database were created. The dissemination of databases using CD-ROM took off in 1987 when the price of CD-ROMs began to fall. It is an excellent tool for distributing large amounts of data often in archival form, and is popular in libraries and documentation centres particularly in less developed countries.

The technologies covered by the information systems were presented in Chapter 2 of this report and will not be discussed here. The descriptions and terms used are consistent for all systems and are presented in Box 7.1. The descriptions are designed so that a great deal can be learnt with a glance at just the top portion of the form and more detailed supporting information is provided in the lower part. For the description of EST institutions, generally two institutions are presented per page and the information provided includes the institution's name, category, a brief text description, a contact, the address, telephone, fax and email. The Internet address for the institutions homepage is included where available. In some instances, the homepage of the institution is presented as the main contact point.

Box 7.1: Definition of Terms

1. **System Name:** the name by which the database is more popularly known.
2. **Category:** as introduced in Chapter 2.
3. **Technologies Covered:** the range of technologies related to ESTs which the database covers.
4. **Information Format:**
   Abstracts: a collection of abstracts (abridgment or summary) of books, theses, articles, etc.
   Bibliographic Citations: a listing of references on a certain subject, including title, author, publisher, date of publication and other related information
   Directory: a classified listing of names of persons and organizations including addresses and contact numbers
   Numeric: statistical data
   Full-Text: whole documents and case studies
   Image: video or graphical documents
   Audio: audio recordings
   Others
5. **Language/s:** the language(s) in which the data is available: Chinese, Danish, English, French, German, Japanese, Russian, Spanish, Others.
6. **Dissemination:** the means by which the data is disseminated (e.g. on-line, CD-ROM) and the dissemination method (e.g. through the World Wide Web)
   On-line: the database is accessible to users from a remote computer and often including dedicated telephone line or Internet connection
   CD-ROM
   Diskette
   Magnetic Tape
   Hard Copy: a published copy (on paper) of the database
7. **Accessibility:**
   Public: available to anyone interested in the database.
   Restricted: access to database is restricted to certain parties or access is limited to certain information in the database.
8. **Size:** the number of records contained in the database. In the case of BBS and clearinghouse systems this item is generally not applicable.
9. **Costs:** the costs to the user including membership/subscription, log-in time for accessing the database and reproduction costs for any material retrieved, downloaded or requested.
10. **Time Span:** date from which records begin and/or when database/system was established.
11. **Coverage:** the geographic coverage of the data available.
    International (worldwide)
    Regional (e.g. Asia)
    National (e.g. Eritrea)
    Local (e.g. Moscow)
12. **Updates:** the frequency in which the database is updated.
    annual, semi-annual, quarterly, monthly, weekly, others
13. **System Owner:** the institution which owns the database and/or the rights to the data in it.
14. **Branch:** the sub-unit of the institution which is in charge of operating and maintaining the database.
15. **Contact:** the person or institution name to whom questions relating to the database should be addressed. The address details are included as well as the information system/institutions homepage URL on the Internet.
16. **System Description:** the hardware and software which runs the database.
17. **Information Contained:** brief description of the type of information in the database.
    Information Source: the source (resource person/institution or document) of information from which the data was derived.
18. **Users, Accessibility:** the actual or intended users of the database.

	System Name and Organization	Location
Category A		
ACPD	Australian Cleaner Production Database Australian Environment Protection Agency (EPA)	Australia
ANNETTE	Asian Network on Technology for the Environment Database Regional Institute of Environmental Technology (RIET)	Singapore
APCTT Data Bank	APCTT data bank on ESTs available for transfer UN-ESCAP Asian and Pacific Centre for Transfer of Technology (APCTT)	India
ATTIC	Alternative Treatment Technology Information Centre United States Environmental Protection Agency (US/EPA)	United States
CLU-IN	Clean-Up Information Bulletin Board System United States Environmental Protection Agency (US/EPA)	United States
CTCCIS	Control Technology Center Clearinghouse Information System United States Environmental Protection Agency (US/EPA)	United States
CTIN	Clean Technology Information Network - CT Database National Environmental Engineering Research Institute (NEERI)	India
EEIS	Energy and Environment Information System UNIDO Industrial Technology Information Bank (INTIB)	Austria
ENSICNET	Environmental Systems Information Centre Network Asian Institute of Technology (AIT)	Thailand
Envirotech On-Line	Envirotech On-Line International Environmental Business & Technology Institute (IEBTI)	United States
EREC	Energy Efficiency and Renewable Energy Clearinghouse United States Department of Energy (US/DOE)	United States
EREN	Energy Efficiency and Renewable Energy Network United States Department of Energy (DOE)	United States
ETDE	Energy Technology Data Exchange Database International Energy Association (IEA)/Energy Technology Data Exchange (ETDE)	USA
GARNET	Global Applied Research Network in Water Supply and Sanitation Water Engineering and Development Centre (WEDC)	United Kingdom
GEM	Global Environmental Marketplace Kishimoto International Technology Institute (KITI)	Japan
GREEN PAGES	Source Directory for Environmental Technology Eco Services Ltd.	Hong Kong
GREENTIE	Greenhouse Gas Technology Information Exchange Greenhouse Gas Technology Information Exchange (IEA/OECD)	Netherlands
ICPIC	Industrial Cleaner Production Information Clearinghouse UNEP Industry and Environment (IE)	France
IEA CADDET Register	IEA CADDET Energy Efficiency Register IEA - Centre for the Analysis and Dissemination of Demonstrated Energy Technologies (CADDET)	Netherlands

EST INFORMATION SYSTEMS

	System Name and Organization	Location
IEA CADDET Renewables Register	IEA CADDET Renewable Energy Register Database IEA - Centre for the Analysis and Dissemination of Demonstrated Energy Technologies (CADDET)	United Kingdom
IEA Heat Pump Programme Library	IEA Heat Pump Programme Library International Energy Agency Heat Pump Programme	Netherlands
ISAT	Information and Advisory Service on Appropriate Technology Deutsche Gesellschaft fur Technische Zusammenarbeit (GTZ)	Germany
JAEE	Japanese Advanced Environmental Equipment Japan Society of Industrial Machinery Manufacturers (JSIM)	Japan
JEMU/TPI Database	Joint Environmental Markets Unit/Technology Partnership Initiative Department of Trade and Industry - UK	United Kingdom
NSFC	National Small Flows Clearinghouse West Virginia University	United States
OAIC	OzonAction Information Clearinghouse United Nations Environment Programme Industry and Environment Programme Activity Centre (IE/PAC)	France
OHMTADS	Oil and Hazardous Material Technical Assistance Data System United States Environmental Protection Agency (US/EPA)	United States
PPIC (Envirosense)	Pollution Prevention Information Clearinghouse United States Environmental Protection Agency (US/EPA)	United States
RACT/BACT/LAER Clearinghouse	Reasonably Available Control Technology, Best Available Control Technology, Lowest Available Emission Rate Clearinghouse United States Environmental Protection Agency (US/EPA)	United States
RENTEK	Information System on Cleaner Technologies Danish EPA	Denmark
RERIC	Regional Energy Resources Information Center Asian Institute of Technology (AIT)	Thailand
TISGLOW	TERI Information Service on Global Warming Tata Energy Research Institute (TERI)	India
VISITT	Vendor Information System for Innovative Treatment Technologies United States Environmental Protection Agency (US/EPA)	United States
WAST	WasteInfo Waste Management Information Bureau	United Kingdom

	System Name and Organization	Location
Category B		
AGRIS	International Information System for the Agricultural Sciences and Technology Food and Agriculture Organization (FAO)	Italy
AQUALINE	AQUALINE Water Research Centre (WRc plc)	United Kingdom
AQUASCI	Aquatic Sciences and Fisheries Abstracts Cambridge Scientific Abstracts (CSA)	United States
CABI	CAB ABSTRACTS CAB INTERNATIONAL (CABI)	United Kingdom
CARIS	Current Agricultural Research Information System Food and Agriculture Organization (FAO)	Italy
CC Search	Current Contents Search Institute for Scientific Information (ISI)	United States
DTA	The Database Technology Assessment (TA - Database) Forschungszentrum Karlsruhe FZK (Research Centre Karlsruhe)	Germany
Energyline	Energyline Abstracts Plus Congressional Information Service	United States
Enviroline	Enviroline Congressional Information Service, Inc. (CIS)	United States
GETNET	Global Environmental Technology Network World Health Organisation (WHO)	Switzerland
HOMS	Hydrological Operational Multi-Purpose System World Meterological Organisation (WMO)	Switzerland
JISCT- E	JICST - English File Japan Information Centre of Science and Technology (JICST)	Japan
POLLUABS	Pollution Abstracts Cambridge Scientific Abstracts (CSA)	United States
SWRA	Selected Water Resources Abstracts United States Geological Survey (USGS)	United States
TOXLINE	TOXLINE National Library of Medicine (NLM)	United States

	System Name and Organization	Location
Category C		
Acid Rain	Acid Rain Congressional Information Service	United States
ARET	Appropriate Renewable Energy Technologies Ministry of Energy, Mines and Water Resources - Eritrea	Eritrea
ASSET	Abstracts on Selected Solar Energy Technologies Tata Energy Research Institute (TERI)	India
AXSES InfoATLAS	AXSES InfoATLAS AXSES Information Systems	Canada
CEABA	Chemical Engineering and Biotechnology Abstracts DECHEMA e.V. (Germany), FIZ CHEMIE GmbH (Germany), Royal Soc. of Chem.UK)	Germany
CES	Canadian Environmental Solutions Industry Canada	Canada
CISEPI	China's Information System for Environmental Protection Industry (Engineering Industry) Ministry of Engineering Industry - Institute of Environmental Protection	China
CNISEP	China's National Information System for Environmental Protection Industry Chinese Association of Environmental Protection Industry (CAEPI)	China
COMPENDEX	Computerised Engineering Index Engineering Information Inc. (Ei)	United States
CPAS	Clean Process Advisory System Centre for Clean Industrial Treatment Technologies (CenCITT)	United States
EDAS	Energy Design Advice Scheme Energy Design Advice Scheme (EDAS)	N. Ireland
EDF-DOC	Electricité de France Electricité de France (EDF)	France
EEI Super Directory of Power Plant Environmental Data	EEI Environmental Directory of US Power Plants Utility Data Institute (UDI)	United States
EIDS	Environmental Information and Documentation System (UMPLIS) Umweltbundesamt/Federal Environment Agency	Germany
Energy Conservation Database	Energy Conservation Database Energy Conservation Centre - Japan (ECCJ)	Japan
Energy Technology and Natural Resources Directory	1994-1995 Canadian Directory on Efficiency and Alternative Energy Technology and Natural Resources Canada Natural Resources Canada	Canada
Energy/Environment Disc	Energy/Environment Disc Engineering Information, Inc. (Ei)	United States
EP3 INFO	Environmental Pollution Prevention Project United States Agency for International Development (USAID) and RCG/Hagler Bailly, Inc.	United States

EST INFORMATION SYSTEMS

	System Name and Organization	Location
ERTH	Environmental Resources Technology Petroleum Abstracts	United States
ETNA	Environmental Technology Network for Asia United States-Asia Environmental Partnership (US-AEP)	United States
EUREKA	Environmental Research Projects EUREKA Secretariat	Belgium
Eurowin	European Wind Turbine Database International Energy Agency (IEA) and the Fraunhofer Society	Germany
GC	Global Change Institute for Scientific Information (ISI)	United States
HCT	Hydrocarbon Technology Information Service Deutsche Gessellschaft für Technische Zusammenarbeit (GTZ) GmbH/German Appropriate Technology Exchange (GATE)	Germany
ICARUS	Information System on Conservation and Application of Resources Using a Sector Approach University of Utrecht	Netherlands
ICRAF MTSD	ICRAF Multi-Purpose Tree and Shrub Database International Centre for Research in Agro-Forestry (ICRAF)	Kenya
IETD	Innovative Environmental Technology Database Solutions Software Corporation	United States
LINK	The LINK System Applied Environmental Technologies (AET)	United States
NATTA	Network for Alternative Technology and Technology Assessment Network for Alternative Technology and Technology Assessment (NATTA)	United Kingdom
REFIS	Russian Ecological Federal Information System Russian Ecological Federal Information Agency (REFIA)	Russia
REPIDISCA	REPIDISCA Bibliographic Database Pan-American Centre for Sanitary Engineering & Environmental Sciences (CEPIS)	Peru
RET	Renewable Energy Technologies Energy Commission of Nigeria	Nigeria
SAGE	Solvent Alternatives Guide United States Environmental Protection Agency (US/EPA)	United States
TROPAG & RURAL	Tropag & Rural Royal Tropical Institute	Netherlands
WATERLIT	Water Literature Database South African Water Information Centre (SAWIC)	South Africa

Category A Systems

ACPD

Category A

System Name:	Australian Cleaner Production Database		
Technologies Covered:	Cleaner production and processes		
Information Format:	full-text	Language *:	EN
		Dissemination **:	OL
Accessibility:	public	Size:	not known
Costs:	free of charge	Time Span:	not known
Coverage:	national	Up-dates:	not known
System Owner:	Environmental Protection Agency (EPA)		
Branch:	Australian Centre for Cleaner Production	Contact:	Mr. Roger Woods or Ms. Kate Dixon
Address:	Blackhall Street, Barton A.C.T., 2600	Tel:	+61-6-274-1472
		Fax:	+61-6-274-1921
Location:	Australia	E-mail:	woods@mgdestmx01.erin.gov.au
Internet/WWW:	http://kaos.erin.gov.au/net/ncpd.html		

System Description: Database and Bulletin Board System.

Information Contained: Case studies, bibliographies, contacts, and cost equations. The database is primarily text manipulated.

Information Source: Various Australian and international sources.

Dissemination Method: On-line and Diskette. The system can be accessed through Internet and Councilnet (a network of environmental information for local government bodies). The information will also be accessible through a toll-free phone number.

Users, Accessibility, Cost: Resource primarily for small- to medium-sized businesses, local councils, business associations and research bodies. Free of charge.

** EN=English, FR=French, GE=German, SP=Spanish, JP=Japanese, CH=Chinese, RU=Russian, DA=Danish, SWE=Swedish, AR=Arabic, OT=Other Language/s*

*** OL=on-line, DK=diskette, CD=CD ROM, MT=magnetic tape, QR=query response, HC=hard copy*

Category A Systems

ANNETTE

Category A

System Name:	Asian Network on Technology for the Environment Database		
Technologies Covered:	Energy, Water, Air, Noise and Vibration, Solid Waste, Hazardous Waste, Waste Planning & Management, Clean Technologies		
Information Format:	abstracts, full-text	Language *:	EN
		Dissemination **:	HC
Accessibility:	restricted	Size:	17,000
Costs:	usage charge; subscription	Time Span:	not known
Coverage:	Europe & Asia	Up-dates:	not known
System Owner:	Regional Institute of Environmental Technology (RIET)		
Branch:		Contact:	Dr. Philippe Bergeron, Managing Director
Address:	3 Science Park Drive, #04-08, PSB Annex, Singapore 118223	Tel:	+65-777-2685
		Fax:	+65-773-2800
Location:	Singapore	E-mail:	riet@pacific.net.sg
Internet/WWW:			

System Description: Database.

Information Contained: Environmental pollution control, manufacturing and recycling technologies. Environmental technology products and services, business types, model application, and product specifications.

Information Source: Compiled from directories and RIET networking.

Dissemination Method: Currently disseminated through a query-response system but planned to be accessible on-line via the Internet (date not determined).

Users, Accessibility, Cost: Main users include business sectors in Asia and Europe, particularly small and medium-sized firms. For industry members (companies located in Asia), free advice on environmental technology via HELPLINE (tel. +65-7771572). For technology suppliers, i.e. producer of environmental technology, paid access on project basis.

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Category A Systems

APCTT Data Bank

Category A

System Name:	APCTT data bank on ESTs available for transfer		
Technologies Covered:	Cleaner Production (all sectors)		
Information Format:	full-text	Language *:	EN
		Dissemination **:	QR, HC
Accessibility:	restricted	Size:	6,000
Costs:	varies	Time Span:	1991 to date
Coverage:	international	Up-dates:	daily
System Owner:	UN-ESCAP Asian and Pacific Centre for Transfer of Technology (APCTT)		
Branch:		Contact:	Dr. Vadim Y. Kotelnikov
Address:	P.O.Box 4575, New Delhi 110 016	Tel:	+91-11-6856276
		Fax:	+91-11-6856274
Location:	India	E-mail:	apctt@sirnetd.ernet.in
Internet/WWW:			

System Description: Query and response service using a regional data bank covering information to facilitate transfer of technology including technology description, financing, consultancy and marketing assistance.

Information Contained: Cleaner production and pollution control for various industry sectors including agriculture, chemicals, construction, transport, electronics, information, energy, food, instrumentation, industrial logistics and services, machinery, materials, coatings, medical technology, metals, plastics and rubber, paper, wood and textiles. Technology offers , technology requests, consultants and institutions. Publications offer information on process description, development status, marketing aspects, company profiles.

Information Source: Technology offers and requests from various sources worldwide.

Dissemination Method: Query and response service and publications. Publications include Tech Monitor (bi-monthly) and the Catalogue of International Technology Opportunities. Research and training and value added technology information services.

Users, Accessibility, Cost: Major users include industries especially SME's, management and engineering consultants. Access through subscription and inquiry service. Members of the International Network for Transfer of Environmentally Sound Technologies (INTET) established by ACPTT for SMEs are serviced on a priority basis. Membership fee range from US$300 (regular) to US$1,000 (sponsor) for developed and newly industrialized countries (NIC) and US$200 (regular) and US$400 (sponsor) for developing countries.

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*** OL=on-line, DK=diskette, CD=CD ROM, MT=magnetic tape, QR=query response, HC=hard copy*

Category A Systems

ATTIC

Category A

System Name:	Alternative Treatment Technology Information Centre		
Technologies Covered:	Hazardous Waste		
Information Format:	abstracts, full-text, performance data	Language *:	EN
		Dissemination **:	OL
Accessibility:	public	Size:	not known
Costs:	free of charge	Time Span:	1988
Coverage:	international	Up-dates:	annually
System Owner:	United States Environmental Protection Agency (US/EPA)		
Branch:	Urban Watershed Management	Contact:	Daniel Sullivan, P.E., Program Manager
Address:	U.S. EPA (MS 106), 2890 Woodbridge Ave., Edison, NJ 08837-3679	Tel:	+1-908-321-6635
		Fax:	+1-908-321-6677
Location:	United States	E-mail:	Sullivan.Daniel@epamail.epa.gov
Internet/WWW:	http://www.epa.gov/attic/		

System Description: Database system providing information on innovative treatment technologies. Hardware requirements are IBM (or compatible) PC, Apple, or a dumb terminal, modem and communications software.

Information Contained: Pollution control and performance data for US alternative treatment technologies for hazardous waste. The central component is the ATTIC database which contains abstracts and summaries from technical documents and reports that are both keyword and free-text searchable. ATTIC v2.0 provides access to several databases including Treatment and Technology Database, Treatability Study Database, Underground Storage Tank Database, and Oil/Chemical Spill Database.

Information Source: Information from wide range of sources such as: Superfund Innovative Technology Evaluation (SITE) Program, Records of Decisions (RODs), RCRA Delisting Actions, Treatability Studies, NATO/International Studies, U.S. Air Force, U.S. Army Environmental Center, state agencies, industry field studies and remedial projects, conferences and symposia, technical journals and bulletins.

Dissemination Method: On-line computer access (tel. +1-703-908-2138). Abstracts can be downloaded while copies of complete reports are available on request. ATTIC Hotline: +1- 703-908-2137.

Users, Accessibility, Cost: Accessible 24 hours a day. Free of charge No access restrictions. Main users are US federal state and private sectors involved in remediation. Contact ATTIC Technical Support Group/SCG, Inc., 4 Research Place, Suite 210, Rockville, MD 20850, USA (tel: +1-301-670-6294, fax: +1-301-670-3815).

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*** OL=on-line, DK=diskette, CD=CD ROM, MT=magnetic tape, QR=query response, HC=hard copy*

Category A Systems

CLU-IN

Category A

System Name:	Clean-Up Information Bulletin Board System		
Technologies Covered:	Land and Agriculture, Hazardous Waste, Water Pollution Control		
Information Format:	full-text, directory, numeric, bibliographic	Language *:	EN
		Dissemination **:	OL, HC
Accessibility:	public	Size:	not applicable
Costs:	free of charge	Time Span:	1995
Coverage:	national	Up-dates:	continuous
System Owner:	United States Environmental Protection Agency (US/EPA)		
Branch:	Technology Innovation Office	Contact:	Mr. Gary Turner, EPA Project Manager
Address:	401 M Street, SW (5102G), Washington, DC 20460	Tel:	+1-703-603-9902
		Fax:	+1-703-603-9135
Location:	United States	E-mail:	turner.gary@epamail.epa.gov
Internet/WWW:	http://clu-in.com		

System Description: An on-line electronic bulletin board system and world wide web homepage providing current events, policy, and technical information on site clean-up. The system allows users to exchange messages, files and databases, read bulletins on-line or operate several databases on-line. Minimum hardware requirement: PC or Mac, communications software and modem.

Information Contained: Innovative treatment technologies. Full-text reports on site clean-ups with emphasis on innovative treatment technologies.

Information Source: The data is supplied primarily by the USEPA's Technology Innovation Office, however, other information is supplied by other offices within the Office of Solid Waste and Emergency Response and the Office of Research and Development as well as states, universities, and private companies.

Dissemination Method: On-line. Published information on CLU-IN include a system flyer.

Users, Accessibility, Cost: EPA offices, academic and research organizations, and the public with restrictions on special interest groups. Free of charge.

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*** OL=on-line, DK=diskette, CD=CD ROM, MT=magnetic tape, QR=query response, HC=hard copy*

Category A Systems

CTCCIS

Category A

System Name:	Control Technology Center Clearinghouse Information System		
Technologies Covered:	Air		
Information Format:	bibliographic, abstracts	Language *:	EN
		Dissemination **:	OL, QR
Accessibility:	public	Size:	not known
Costs:	usage charge	Time Span:	not known
Coverage:	national	Up-dates:	continuous
System Owner:	United States Environmental Protection Agency (USEPA)		
Branch:	Office of Air Quality Planning and Standards, Emission Standards Division	Contact:	USEPA
Address:	MD-13 Research Triangle Park, NC 27711	Tel:	+1-919-541-0800
		Fax:	+1-919-541-0072
Location:	United States	E-mail:	ttnbbs@rtpcnc.epa.gov
Internet/WWW:			

System Description: Electronic bulletin board system on the OAQPS Technology Transfer Network BBS.

Information Contained: Air pollution control technologies and pollution prevention methods as applied to emission sources in the US. Summaries of technologies, emission limits, costs, etc. applied to major sources in the US by state and local agencies; summary of EPA regulations in a similar format.

Information Source: USEPA programmes and local agencies.

Dissemination Method: Available on-line (BBS) and by calling the Control Technology Center hotline (tel: +1-919-541-0800).

Users, Accessibility, Cost: Main users include USEPA offices, state and local governments, business and academic sectors.

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Category A Systems

CTIN

Category A

System Name:	Clean Technology Information Network - CT Database		
Technologies Covered:	Cleaner Production, Water Pollution Control, Air Pollution Control		
Information Format:	full-text	Language *:	EN
		Dissemination **:	OL, DK
Accessibility:	public	Size:	510
Costs:	not decided	Time Span:	not known
Coverage:	international	Up-dates:	not known
System Owner:	National Environmental Engineering Research Institute (NEERI)		
Branch:		Contact:	Dr. P Khanna, Director/Dr. V. Kulkarni, Scientist
Address:	Nehru Marg, Nagpur 440-020	Tel:	+91-712-226071
		Fax:	+91-712-222725
Location:	India	E-mail:	peekay@csneeri.ren.nic.in
Internet/WWW:			

System Description: The CTIN project is currently under development with support from the World Bank and the MoEF. A host computer will be established at MoEF and NEERU will function as the National Information Centre for Cleaner Technologies. There will be two sectoral centres at TERI and the National Chemical Laboratory and 8 sub-centres throughout the country.

Information Contained: Cleaner technologies, cleaner production and pollution control for industrial manufacturing sectors. Information on 510 international case studies for 14 industrial sectors.

Information Source: Literature on cleaner technology from around the world

Dissemination Method: To go on-line nationally after January 1997.

Users, Accessibility, Cost: Research institutes and government. Costs are still to be decided.

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Category A Systems

EEIS

Category A

System Name:	Energy and Environment Information System		
Technologies Covered:	Cleaner Production, Energy, Water, Building and Engineering, Hazardous Waste, Air, Solid Waste, Global Environment - Industrial		
Information Format:	bibliographic, technical referral	Language *:	EN
		Dissemination **:	DK, HC, OL
Accessibility:	public	Size:	16,000
Costs:	varies	Time Span:	1990 to date
Coverage:	international	Up-dates:	daily
System Owner:	United Nations Industrial Development Organisation (UNIDO)		
Branch:	Industrial Technology Information Bank (INTIB)	Contact:	Mr. Peter Pembleton
Address:	Vienna International Centre, P.O.Box 300, Vienna A-1400	Tel:	+43-1-21131-3705
		Fax:	+43-1-21131-6843
Location:	Austria	E-mail:	ppembleton@unido.org
Internet/WWW:	http://www.unido.org		

System Description: Information Resources Management System.

Information Contained: Industrial sectors including electronics industry, leather and leather products, building materials, cement, ceramics, industrial manpower training, wood products, textiles and wearing apparel, iron and steel, non-ferrous metals, petrochemicals, food processing, fertilizers, etc. Information is available in the form of bibliographic references, hard copy reports, referral process, and through Internet.

Information Source: Although key information is based on UNIDO activities, projects and studies, the system also contains information from outside sources. Printed sources are the "Industry and Environment- a guide to sources of information", the "Energy and Environment Series" (journal), the "Environmental Awareness Bulletin".

Dissemination Method: Information is principally disseminated via INTIB centers in over 90 countries using a query response mechanism and increasingly through national network, e.g. in Peru, Thailand, Zimbabwe and Hungary and through the NCPC programme to establish environmental technology transfer centres.(currently in 9 countries).

Users, Accessibility, Cost: Access is not restricted by country although it is achieved via the INTIB centres located worldwide. Cost is decided by the various centers and depends on the information needed.

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Category A Systems

ENSICNET

Category A

System Name:	Environmental Systems Information Centre Network		
Technologies Covered:	Cleaner Production, Water, Air, Solid Waste, Land and Agriculture		
Information Format:	directory, bibliographic	Language *:	EN
		Dissemination **:	OL, HC
Accessibility:	restricted	Size:	11,000
Costs:	subscription, usage charge	Time Span:	1978 to date
Coverage:	international	Up-dates:	monthly
System Owner:	Asian Institute of Technology (AIT)		
Branch:	Center for Library and Information Resources (CLAIR)	Contact:	Dr. Robert D. Stueart (stueart@ait.ac.th)
Address:	P.O.Box 2454, Klong Luang 12120	Tel:	+66-2-524-5882/5863
		Fax:	+66-2-524-5879/5870
Location:	Thailand	E-mail:	enreric@rccsun.ac.th
Internet/WWW:	http://www.ait.ac.th/clair/centers/ensic.html		

System Description: The database is written on CDS/ISIS and is available on-line via the Internet.

Information Contained: Pollution control technologies for sanitation, water supply and water resources, wastewater treatment, solid waste treatment, toxic and hazardous waste, air and noise pollution. Directory and bibliographic database, documentation centre, publications, manuals, newsletters, reviews, reports and proceedings.

Information Source: Centre publishes and circulates three regular publications to about 400 members in 55 countries, provides reference, referral and reprographic services and training.

Dissemination Method: On-line and Query-Response services.

Users, Accessibility, Cost: ENSIC users include engineers, technical workers, administrators, educators and professional workers in the fields of water supply, waste management and recycling, sanitation and environmental pollution. Fee charged for all services.

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Category A Systems

Envirotech On-Line

Category A

System Name:	Envirotech On-Line		
Technologies Covered:	Cleaner Production, Energy, Water, Air, Land and Agriculture, Solid Waste, Hazardous Waste, Building and Engineering		
Information Format:	directory, full-text	Language *:	EN, JP, SP, CH
		Dissemination **:	OL, QR
Accessibility:	public	Size:	not known
Costs:	subscription	Time Span:	1996
Coverage:	international	Up-dates:	continuous
System Owner:	International Environmental Business & Technology Institute (IEBTI)		
Branch:		Contact:	Mr. John Gormally
Address:	611 Belchertown Rd, P.O. Box 44, Amherst, MA 01004	Tel:	+1-413-598-8600
		Fax:	+1-413-598-0350
Location:	United States	E-mail:	gormally@crocker.com
Internet/WWW:	http://www.envirotech.org		

System Description: Database and inquiry information retrieval system, questions in natural language in English, Japanese, Spanish, and Chinese.

Information Contained: Environmental pollution control technology, products, services, research and financing provided by US environmental technology companies. Technology descriptions, industry directories, US and Mexico environmental laws and regulations, environmental newsletters, current bids for international projects and contract opportunities.

Information Source: Private and government databases.

Dissemination Method: Accessible via the Internet.

Users, Accessibility, Cost: Main users are government agencies, banks, international development agencies, and trade associations. Subscriptions from $500-$5000 per year depending on use and customer support. Phased implementation with initial focus on Latin America beginning with Mexico. Funding has been received from US Dept of Commerce to launch system.

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Category A Systems

EREC

Category A

System Name:	Energy Efficiency and Renewable Energy Clearinghouse		
Technologies Covered:	Energy, Global Environment, Land and Agriculture, Building and Engineering		
Information Format:	full-text	Language *:	EN, SP
		Dissemination **:	OL, DK, QR, HC
Accessibility:	public	Size:	not applicable
Costs:	not known	Time Span:	1994
Coverage:	national	Up-dates:	daily
System Owner:	United States Department of Energy (USDOE)		
Branch:	Office of Energy Efficiency and Renewable	Contact:	Mr. Thomas Wulf
Address:	NREL, 1617 Cole Blvd., Golden, Colorado 80401-3393	Tel:	+1-303-275-4256
		Fax:	+1-303-275-4222
Location:	United States	E-mail:	wulf@tcplink.nrel.gov
Internet/WWW:	http://erecbbs.nciinc.com/		

System Description: Clearinghouse. Referrals to industry associations and trade groups, referrals to government agencies and relevant organizations.

Information Contained: Renewable and Conservation Energy Technologies. Energy-efficient technologies for residential, commercial and industrial applications including building envelope measures (insulation, weatherization, windows, resource efficient construction principles and techniques, etc.) building equipment (lighting, heating, ventilating and air conditioning, appliances, etc) and other devices (motors, controls, energy management systems). Information formats range from fact sheets, publications, technology briefs, magazines and journal articles, conference proceedings, educational and curriculum materials.

Information Source: USDOE publications, public and private organizations involved in renewable energy and energy efficiency, industrial periodicals, conference papers and personal contacts.

Dissemination Method: On-line via Internet, query-response, diskette, and hard copy. Computer bulletin board (toll free number available in the US at 800-273-2957).

Users, Accessibility, Cost: Users are those interested in applying or promoting energy-efficient and renewable energy systems and products including: consumers, builders, teachers and students, businesses, entrepreneurs, trade groups, media, federal, state and local government officers, policy-makers, energy engineers and other professionals. Costs not known.

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Category A Systems

EREN

Category A

System Name:	Energy Efficiency and Renewable Energy Network		
Technologies Covered:	Energy, Global Environment, Land and Agriculture, Solid Waste		
Information Format:	full-text	Language *:	EN, SP
		Dissemination **:	OL
Accessibility:	public	Size:	not applicable
Costs:	free of charge	Time Span:	1994
Coverage:	national	Up-dates:	daily
System Owner:	United States Department of Energy (USDOE)		
Branch:	Office of Energy Efficiency and Renewable	Contact:	Ms. Pame Lowe
Address:	MSEE-541, Rm. SE-036, Forrestal Bldg., 1000 Independence Ave., SW Washington DC	Tel:	+1-303-275-4035
		Fax:	+1-303-275-4222
Location:	United States	E-mail:	lowep@tcplink.nrel.gov
Internet/WWW:	http://www.eren.doe.gov		

System Description: The Energy Efficiency and Renewable Network (EREN) is a World Wide Web (WWW) site that serves as a single point of access to qualitative information on energy efficiency and renewable energy technologies and with links to gophers, FTP sites, and other WWW.

Information Contained: Renewable and Energy Conservation Technologies. Resources on energy efficiency and renewable energy technologies. Renewable energies; solar, wind, geothermal, hydrogen, fuels and chemicals. Information on and access to documents, databases, bulletin boards, discussion groups on all kinds of energy efficiency and renewable energy technologies

Information Source: Various but mostly from the US.

Dissemination Method: On-line through the Internet.

Users, Accessibility, Cost: EREN is accessible to anyone having (nationally or internationally) an Internet access that supports a World Wide Web browser or Lynx. EREN is accessible at URL - http://www.eren.doe.gov. Free of charge.

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Category A Systems

ETDE

Category A

System Name:	Energy Technology Data Exchange		
Technologies Covered:	Energy, Global Environment, Pollution Control & Waste Management associated with Energy		
Information Format:	bibliographic, abstracts	Language *:	EN
		Dissemination **:	OL, CD
Accessibility:	public(ETDE mem. countries)	Size:	over 3,000,000
Costs:	membership	Time Span:	1987 to present
Coverage:	international	Up-dates:	CD, quarterly; OL 24/year
System Owner:	International Energy Association (IEA)		
Branch:	Energy Technology Data Exchange (ETDE)	Contact:	Ms. Debbie Cutler
Address:	P.O. Box 1000, Oak Ridge, Tennessee 37831	Tel:	+1-423-576-1272
		Fax:	+1-423-576-2865
Location:	United States	E-mail:	debbie.cutler@ccmail.osti.gov
Internet/WWW:	http://www.etde.org		

System Description: ETDE is a global consortium of countries sharing energy-related scientific and technical information with the goal of promoting international cooperation in energy research and development. Member countries also have access to the USDOE's database covering the years 1974-1987.

Information Contained: The Energy Database includes records on the latest energy technologies to mitigate greenhouse gases or conserve energy, on alternative and renewable technologies, and on environmental aspects of energy production and use, such as, oil spill cleanup devices and air pollution monitoring techniques. Bibliographic citations to energy-related literature, such as, journal articles, R&D reports, conference papers, books, theses, and patents. An availability statement tells where the cited document can be obtained.

Information Source: Member countries, IEA Coal Research, and International Atomic Energy Agency (IAEA)/International Nuclear Information System (INIS).

Dissemination Method: Available publicly to member countries through the commercial host, Knight-Ridder (Dialog) Information Services and STN International, and on CD-ROM from Knight-Ridder and SilverPlatter Information.

Users, Accessibility, Cost: The users are as diverse including scientists, engineers, policy-makers, librarians, industry leaders, and students. Costs involved depends on the organization and method of disseminating information.

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Category A Systems

GARNET

Category A

System Name:	Global Applied Research Network in Water Supply and Sanitation		
Technologies Covered:	Water, Solid Waste		
Information Format:	full-text	Language *:	EN
		Dissemination **:	QR, HC
Accessibility:	public	Size:	4,000
Costs:	free of charge	Time Span:	1990
Coverage:	international	Up-dates:	quarterly
System Owner:	Water Engineering and Development Centre (WEDC)		
Branch:	Loughborough University	Contact:	Mr. Darren Saywell, GARNET Secretary
Address:	Leicestershire LE11 3TU	Tel:	+44-1509-222885
		Fax:	+44-1509-211079
Location:	United Kingdom	E-mail:	d.l.saywell@lboro.ac.uk
Internet/WWW:	http://agate.lut.ac.uk/departments/cv/wedc/index.html		

System Description: On-line via the Internet. GARNET provides links to institutions and individuals, researchers, and programme implementers, and industrial and developing countries.

Information Contained: Solid waste management, water quality monitoring.

Information Source: GARNET is structured around the Global Network Co-ordinator (WEDC), whose role is to promote and co-ordinate the initiative, and topic network co-ordinators (TNCs), a series of contacts which form the backbone of the system. There are currently 16 specific applied research networks, drawn from both hardware and software themes.

Dissemination Method: Dissemination via internet, hard copy, query response, and Network.

Users, Accessibility, Cost: Access via letter, fax or e-mail. Network users include researchers, academics and practitioners working in water supply and sanitation sector. Access through series of topic network coordinators who maintain sources falling under the subjects listed or centrally through the WEDC documentation center. Free of charge.

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Category A Systems

GEM

Category A

System Name:	Global Environmental Marketplace		
Technologies Covered:	Cleaner Production, Energy, Water, Air, Solid Waste, Hazardous Waste, Land and Agriculture, Global Environment, Building and Engineering		
Information Format:	full-text	Language *:	JP, EN
		Dissemination **:	OL, HC
Accessibility:	public	Size:	not known
Costs:	free of charge	Time Span:	1995
Coverage:	international	Up-dates:	upon request
System Owner:	Kishimoto International Technology Institute (KITI)		
Branch:	Head Office/Shonan Laboratory	Contact:	Dr. Yukiya Tobe, President
Address:	1-7-42 Honkugenuma, Fujisawa, Kanagawa 251	Tel:	+81-466-25-5985
		Fax:	+81-466-25-5999
Location:	Japan	E-mail:	kiti@infostream.ab.ca
Internet/WWW:	http://www.infostream.ab.ca/gem/		

System Description: Database available via the Internet.

Information Contained: Waste management focusing on recycling technologies. Over 100 Japanese technologies collected yearly that are usable in municipalities and industry. Technologies listed are licensable to developed nations and transferable to developing countries. Introduction of Japanese environmentally sustainable technologies to the world and vice versa.

Information Source: Technology offers submitted by manufacturers and a monthly newsletter, RECYTECH Vision.

Dissemination Method: Hard copy and, as of October 1, 1995, on-line.

Users, Accessibility, Cost: Access through a World Wide Web site (http://204.209.35.254/kiti/index/html). Free of charge for Internet users.

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Category A Systems

GREEN PAGES

Category A

System Name:	Source Directory for Environmental Technology		
Technologies Covered:	Cleaner Production, Energy, Water, Air, Noise and Vibration, Land and Agriculture, Solid Waste		
Information Format:	directory, full-text	Language *:	EN
		Dissemination **:	DK
Accessibility:	public	Size:	2,300
Costs:	one-time purchase	Time Span:	1995
Coverage:	international	Up-dates:	not known
System Owner:	Eco Services Ltd.		
Branch:	Information Systems Group	Contact:	Mr. David A. Neish or Mr. Urs Tobler, Project Manager
Address:	58 Poh Wah Yuen, 2/F, P.O. Box 47, Yung Shue Wan, Lamma	Tel:	+852-2982-1274
		Fax:	+852-2982-2430
Location:	Hong Kong	E-mail:	
Internet/WWW:			

System Description: Database of suppliers of environmental technology worldwide. Requires MS Windows 3.1 and 1.2 Mb disk space.

Information Contained: Water and waste treatment, waste management & recycling, air and noise pollution control, soil decontamination and remediation, power generation and energy efficiency, new and renewable energy technologies. Details of 2,300 suppliers from 33 countries comprising manufacturers, engineering consultants and information services.

Information Source: Manufacturers from 33 countries worldwide.

Dissemination Method: Diskette.

Users, Accessibility, Cost: Users not known. One-time purchase.

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Category A Systems

GREENTIE

Category A

System Name:	Greenhouse Gas Technology Information Exchange		
Technologies Covered:	Cleaner Production, Energy, Air, Global Environment		
Information Format:	full-text, directory	Language *:	EN
		Dissemination **:	OL, DK, HC
Accessibility:	public	Size:	5,400
Costs:	free of charge	Time Span:	1993
Coverage:	international	Up-dates:	daily
System Owner:	Greenhouse Gas Technology Information Exchange (IEA/OECD)		
Branch:	Netherlands Agency for Energy and Environment (NOVEM)	Contact:	Mr. Derk Kalverkamp
Address:	Swentiboldstraat 21, P.O. Box 17, Sittard NL-6130 AA	Tel:	+31-46-595203
		Fax:	+31-46-510389
Location:	Netherlands	E-mail:	nlnovhag@ibmmail. com
Internet/WWW:	http://www.greentie.org		

System Description: The system was developed using Microsoft FOXPRO 2.6 for DOS and is now accessible via the Internet.

Information Contained: Greenhouse and CFCs alternative technologies (sources not known). Energy technologies, energy end-use technologies, CO2, control and abatement technologies, CFC-alternate technologies. Contains names and addresses, contact person, etc. and descriptions of technology expertise of organizations which have expertise on the subject of greenhouse gas technologies, such as, R&D institutions, consultancy and equipment suppliers.

Information Source: Information is gathered by an international network of contact persons heading local teams in participating countries.

Dissemination Method: Query system and on-line through a WWW site.

Users, Accessibility, Cost: Users are decision-makers all over the world concerned with greenhouse gas issues. Users can access the system via the Enquiry Service, by completing an Enquiry Form. On-line enquiries. Free of charge except for publications which are available on cost-recovery basis.

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Category A Systems

ICPIC

Category A

System Name:	Industrial Cleaner Production Information Clearinghouse		
Technologies Covered:	Cleaner Production, Global Environment		
Information Format:	full-text	Language *:	EN
		Dissemination **:	OL, DK, QR
Accessibility:	public	Size:	1,000
Costs:	free of charge	Time Span:	1990 to date
Coverage:	international	Up-dates:	semi-annually
System Owner:	UNEP Industry and Environment (IE)		
Branch:	Cleaner Production Programme	Contact:	Ms. Garrette Clark and Mr. Ahn Tuan Vu
Address:	Tour Mirabeau, 39-43 Quai Andre Citroen, Paris 75739, Cedex 15	Tel:	+33-1-44-37-1450/1459
		Fax:	+33-1-44-37-1474
Location:	France	E-mail:	icpic@unep.fr
Internet/WWW:	http://www.unepie.org		

System Description: Clearinghouse. PC, modem and communications software.

Information Contained: Industrial cleaner production for improved housekeeping practices, industrial process changes, product changes, material changes and materials recycling. Contains a message centre, bulletins, calender of events, programme summaries, on-line bibliography, a directory of contacts, information on working groups and topical conferences. Also provides access to features of the Pollution Prevention Information Clearinghouse run by the USEPA.

Information Source: Cleaner Production Working Groups for leather tanning, textiles, metal finishing, pulp and paper, biotechnology and cleaner products. National Cleaner Production Centres in Brazil, China, Mexico, India, Tanzania, and Zimbabwe. Data from international sources including publications, abstracts, technical case studies, case studies on policies and strategies, lists of experts and institutions, texts of important documents.

Dissemination Method: Originally accessible through phone lines with a PC, modem and communications software. Hard copy distribution and query response service as well. Access via the Internet commenced March 1996.

Users, Accessibility, Cost: Users include federal, state, local and international governments; industry and trade associations; public and private institutes; public interest groups; and academia. Free of charge.

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Category A Systems

IEA CADDET Register

Category A

System Name:	IEA CADDET Energy Efficiency Register		
Technologies Covered:	Energy		
Information Format:	directory, full-text	Language *:	EN
		Dissemination **:	DK, HC, OL
Accessibility:	public	Size:	1,800
Costs:	one-time purchase	Time Span:	1987 onwards
Coverage:	international	Up-dates:	semi-annually
System Owner:	IEA - Centre for the Analysis and Dissemination of Demonstrated Energy Technologies		
Branch:	Energy Efficiency	Contact:	Mr. Guus van Hoof, General Manager
Address:	P.O. Box 17, Sittard NL-6130 AA	Tel:	+31-46-4202224
		Fax:	+31-46-4510389
Location:	Netherlands	E-mail:	nlnovcce@ibmmail.com
Internet/WWW:	http://www.caddet-ee.org		

System Description: Minimum requirements: IBM compatible PC (stand-alone or networked) with 286 processor or higher and approximately 12.5 Mb of available hard disk space.

Information Contained: Energy saving end-use technologies and demonstration projects with application in the end-use sectors; buildings, industry, transport, utilities and agriculture. Each entry contains description of the project under the headings; general description, technical data, energy data, economic data and environmental data. Contact information is included for the host company, monitoring organization and a contact organization for further information. The Register is centrally updated with new versions being released every six months.

Information Source: CADDET Energy Efficiency National Teams

Dissemination Method: The Register is available on-line via the CADDET EE homepage for users in CADDET member countries. CADDET also publishes a newsletter - a quarterly magazine, technical brochures - analysis reports - State of the art reviews of selected energy technologies and. CADDET Maxi Brochures.

Users, Accessibility, Cost: Anyone interested in energy efficient technologies. Main users include government, power utilities, building sector, and industrial groups. CADDET Register end-user version: NLG160 (member countries), NLG320 (non-member countries); CADDET Register network version: NLG1000 (not available in non-member countries); CADDET Analyzes Series Reports: NLG60.

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Category A Systems

IEA CADDET Renewables Register

Category A

System Name:	IEA CADDET Renewable Energy Register Database		
Technologies Covered:	Energy (all renewable energy technologies)		
Information Format:	abstracts, full-text, directory	Language *:	EN
		Dissemination **:	OL, DK, QR, HC
Accessibility:	restricted	Size:	240
Costs:	one-time purchase	Time Span:	1994
Coverage:	international	Up-dates:	semi-annually
System Owner:	IEA - Centre for the Analysis and Dissemination of Demonstrated Energy Technologies		
Branch:	Centre for Renewable Energy	Contact:	Mr. Philip Mann (philip.mann@aeat.co.uk)
Address:	ETSU, Harwell OX11 0RA	Tel:	+44-1235-432536
		Fax:	+44-1235-433595
Location:	United Kingdom	E-mail:	caddet.renew@aeat.co.uk
Internet/WWW:	http://www.caddet.co.uk/		

System Description: PC (IBM compatible) DOS and Windows computers and computers with WWW access.

Information Contained: All renewable energy technologies, wind, biomass, waste, solar (active, passive), photovoltaic, hydro, geothermal and tidal. Contains information on demonstration projects from 7 CADDET member countries. Each project includes; an abstract (general description, technical data, performance data, economic data, environmental data), contact details and literature references.

Information Source: CADDET Renewable Energy National Teams.

Dissemination Method: Query service system, diskette, Internet and hard copy. CADDET Renewable Energy Technologies has a homepage on the Internet which describes the organization and the products with examples of each for product viewing. A full searchable version of the Register database is available from the WWW site.

Users, Accessibility, Cost: Users include system developers, financiers, policy makers, power utilities, waste disposal sector, manufacturing, buildings and transportation. The Register is distributed on diskette (by the National Teams to member countries and by the CADDET Centre to non-member countries). To obtain the Register on diskette, member country users order through their National Teams. Non-member country Individuals order from the CADDET Centre and pay £100 for a single user version. Project printouts may be obtained at £1 per project for non-member countries. Note that there is a minimum order of £15 and the max. number of printouts that will be sent to an organization is 30; for more than 30 project printouts, the database should be purchased on diskette.

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*** OL=on-line, DK=diskette, CD=CD ROM, MT=magnetic tape, QR=query response, HC=hard copy*

Category A Systems

IEA Heat Pump Programme Library

Category A

System Name:	IEA Heat Pump Programme Library		
Technologies Covered:	Energy		
Information Format:	bibliographic, abstracts	Language *:	EN
		Dissemination **:	OL
Accessibility:	public	Size:	1,000
Costs:	free of charge	Time Span:	not known
Coverage:	international	Up-dates:	quarterly
System Owner:	International Energy Agency Heat Pump Programme		
Branch:	IEA Heat Pump Centre	Contact:	Mr. Mike Steadman
Address:	P.O. Box 17, 6130 AA Sittard	Tel:	+31-46-4202-236
		Fax:	+31-46-4510-389
Location:	Netherlands	E-mail:	nlnovhpc@ibmmail.com
Internet/WWW:	http://www.heatpumpcentre.org		

System Description: The IEA Heat Pump Programme Library is a database being operated on the World Wide Web.

Information Contained: Energy Conservation Technologies. Contains bibliographic details including abstracts of some 1000 books, articles and papers relating to heat pumping technologies.

Information Source: Newsletter, analysis reports, workshop reports, conference proceedings, and brochures from the IEA Heat Pump Programme.

Dissemination Method: The IEA Heat Pump Programme Library is available on-line via the IEA Heat Pump Centre's Internet site on the World Wide Web. All publications listed that are produced by the IEA Heat Pump Centre are widely available.

Users, Accessibility, Cost: Governments, universities, research institutes, utilities, equipment manufacturers, end users in building and industry. Member countries can participate in the HPC for a fee which is dependent on the country's GNP. Non-member countries may avail of HPC publications at extra cost.

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Category A Systems

ISAT

Category A

System Name:	Information and Advisory Service on Appropriate Technology		
Technologies Covered:	Energy, Water, Air, Noise and Vibration, Building and Engineering		
Information Format:	full-text, citations, directory	Language *:	EN, GE, FR, SP
		Dissemination **:	OL, QR, HC
Accessibility:	public	Size:	16,000
Costs:	free of charge	Time Span:	1988 to date
Coverage:	international	Up-dates:	continuous
System Owner:	Deutsche Gesellschaft fur Technische Zusammenarbeit (GTZ)		
Branch:		Contact:	Mr. Dirk Franken or Mr. Reinhard Woytek
Address:	Postfach 5180, Eschborn D-65726	Tel:	+49-6196-79-3184
		Fax:	+49-6196-79-7352
Location:	Germany	E-mail:	dirk.franken@gtz.de
Internet/WWW:	http://www.gtz.de/gate/isat		

System Description: Documentation centre, technical consultancy for projects, question and answer service, publications and media, technical assistance, document delivery service, financial support for projects and joint ventures.

Information Contained: Environmental pollution control, renewable energy systems, water supply and waste water disposal, agriculture, food processing, crafts and small-scale industry, building and construction materials, household energy. Technology descriptions.

Information Source: Information sources include international and national publications, including information from NGOs as well as GTZ projects.

Dissemination Method: In-house publications and on-line, and query-response service.

Users, Accessibility, Cost: No restrictions on access. However, work is generally undertaken with organizations but also to private individuals from developing countries. Main users are ISAT partner organizations in Africa, Latin America and Asia and the Pacific, as well as, experts in developing countries, GTZ staff, NGOs and German development cooperation institutions. Information services free of charge for developing countries.

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Category A Systems

JAEE

Category A

System Name:	Japanese Advanced Environmental Equipment		
Technologies Covered:	Water, Air, Noise and Vibration, Solid Waste		
Information Format:	directory, full-text	Language *:	EN
		Dissemination **:	OL, HC
Accessibility:	public	Size:	400
Costs:	free of charge	Time Span:	1995
Coverage:	national	Up-dates:	continuous
System Owner:	Japan Society of Industrial Machinery Manufacturers (JSIM)		
Branch:	Environment Equipment Division	Contact:	Mr. Moriji Takeda, General Manager
Address:	Kikaishinko Bldg., Rm. 405, 5-8 Shiba-koen, Minato-ku, Tokyo 105	Tel:	+81-3-3434-6820
		Fax:	+81-3-3434-4767
Location:	Japan	E-mail:	
Internet/WWW:	http://www.unep.or.jp/gec/		

System Description: Database accessible via the Internet.

Information Contained: Air and water pollution control, waste treatment, noise and vibration control equipment. Classifications of equipment, descriptions of technologies, products list, directory of manufacturers, detailed index.

Information Source: Information are acquired direct from the manufacturers.

Dissemination Method: Available on-line and in printed version, "Introduction to Japanese Advanced Environmental Equipment".

Users, Accessibility, Cost: Local and international governments and industries. ¥10,000 for the printed copy plus mailing charge. Internet access is free of charge.

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Category A Systems

JEMU/TPI Database

Category A

System Name:	Joint Environmental Markets Unit/Technology Partnership Initiative		
Technologies Covered:	Water, Air, Solid Waste, Hazardous Waste, Energy, Cleaner Production, Land & Agriculture, Construction, Building & Engineering, Global Environment, Noise & Vibration		
Information Format:	full-text	Language *:	EN
		Dissemination **:	OL, HC
Accessibility:	public	Size:	not known
Costs:	free of charge	Time Span:	not known
Coverage:	international	Up-dates:	not known
System Owner:	Department of Trade and Industry - UK		
Branch:	Environment Directorate	Contact:	Ms. Stella Blacklaws, Deputy Director
Address:	JEMU/TPI, 151 Buckingham Palace Road, London SW1W 9SS	Tel:	+44-171-215-1644
		Fax:	+44-171-215-1089
Location:	United Kingdom	E-mail:	
Internet/WWW:			

System Description: Database. Guide to UK environmental technology and expertise of interest to both developing and developed countries.

Information Contained: Air pollution control, water & wastewater treatment, waste management, contaminated land, energy management, renewable energy, marine pollution control, environmental monitoring & analysis, environmental consultancy services, noise & vibration control, recovery & recycling. The main reason is to provide information on company capability and type of technology to encourage contact between UK companies and those overseas for a wide range of activities from missions to joint ventures and supply.

Information Source: UK companies and organizations.

Dissemination Method: Nationally via JEMU and ETBPP. Internationally via TPI or JEMU. Electronic access is planned for official use. Selected listing are available in hard copy according to company requirements.

Users, Accessibility, Cost: Primary use is for international requirements through TPI for rapidly industrializing and developing countries and JEMU for developed countries: both of these can be served via interested parties in the UK. TPI network seeks to improve communication between organizations for the purpose of technology transfer and to provide advice and information.Free of charge.

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Category A Systems

NSFC

Category A

System Name:	National Small Flows Clearinghouse		
Technologies Covered:	Water		
Information Format:	bibliographic, full-text	Language *:	EN
		Dissemination **:	OL, QR, VD
Accessibility:	public	Size:	2,600
Costs:	free of charge	Time Span:	1979
Coverage:	national	Up-dates:	not known
System Owner:	West Virginia University		
Branch:		Contact:	Ms. Pam Schade
Address:	P.O. Box 6064, Morgantown, WV 26506-6064	Tel:	+1-304-293-4191
		Fax:	+1-304-293-3161
Location:	United States	E-mail:	
Internet/WWW:			

System Description: On-line electronic bulletin board and query service.

Information Contained: Pollution control for alternative wastewater treatment technology for small communities. Includes four databases: (1) Small Flows Bibliographic Database, literature database on small and alternative wastewater systems technologies; (2) Innovative and Alternative (I/A) Facilities Technologies Database containing information on 1900 facilities using a combined total of 2600 innovative and wastewater technologies; (3) a manufacturers and consultants database contains contact and product information, and expert consultants; and (4) a state regulations database.

Information Source: Not known.

Dissemination Method: Hardcopy distribution of technical manuals and case studies. Query service through toll free hotline (tel: 1-800-624-8301).

Users, Accessibility, Cost: Used by US state agencies, technical assistance organizations, consulting engineers and local officials. Free public access to bulletin board service.

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Category A Systems

OAIC

Category A

System Name:	OzonAction Information Clearinghouse		
Technologies Covered:	Cleaner Production, Air, Global Environment		
Information Format:	full-text, bibliographic	Language *:	EN
		Dissemination **:	OL, QR, DK
Accessibility:	public	Size:	7,000
Costs:	free of charge	Time Span:	1991 to date
Coverage:	international	Up-dates:	semi-annually
System Owner:	United Nations Environment Programme Industry and Environment (IE)		
Branch:	OzonAction Programme	Contact:	Mr. Rajendra Shende
Address:	Tour Mirabeau, 39-43 Quai Andre Citroen, Paris 75739, Cedex 15	Tel:	+33-1-44-37-14-59
		Fax:	+33-1-44-37-14-74
Location:	France	E-mail:	ozonaction@unep.fr
Internet/WWW:	http://www.unepie.org		

System Description: Comprehensive information clearinghouse. OzonAction Information Clearing house – diskette version OAIC-DV self-contained literature search database. Installed on PC.

Information Contained: All alternative technologies, chemicals and strategies that reduce, replace or eliminate the production and use of ozone depleting substances. The technologies address the following industrial sectors: aerosols, sterilants, carbon tetrachloride, halons (fire protection), rigid and flexible plastic foams, refrigeration, air conditioning, and heat pumps, solvents, coatings, adhesives, methyl bromide (soil fumigation and crop shipment disinfection). OzonAction contains technology case studies, a database of ODS-reduction products and services; national and corporate programme summaries; experts; literature database of significant ODS-reduction documents; and message centers. It also relays the solvent substitute database known as OZONET compiled by the Industry Cooperative for Ozone Layer Protection (ICOLP).

Information Source: Information compiled by the Industry Cooperative for Ozone Layer Protection (ICOLP) and other sources.

Dissemination Method: Through on-line OAIC bulletin board system, training workshops, interactive meetings in developing countries, country and institutional strengthening activities and query response service.

Users, Accessibility, Cost: Targeted at developing countries. Free of charge.

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Category A Systems

OHMTADS

Category A

System Name:	Oil and Hazardous Material Technical Assistance Data System		
Technologies Covered:	Hazardous Waste		
Information Format:	abstracts, full-text	Language *:	EN
		Dissemination **:	OL, CD, DK, MT
Accessibility:	public	Size:	1,400
Costs:	varies	Time Span:	not known
Coverage:	national	Up-dates:	periodically
System Owner:	United States Environmental Protection Agency (USEPA)		
Branch:	Office of Solid Waste and Emergency Response	Contact:	Mr. Rich Norris
Address:	Act (RCRA) Docket and Information Centre, S-305, 401 M. Street, Washington DC 2046	Tel:	+1-703-603-8780
		Fax:	+1-703-603-9116
Location:	United States	E-mail:	
Internet/WWW:	http://www.epa.epa.gov/accessepa/chapter5/s1-5.html		

System Description: Various vendors provide on-line, diskette, microfilm, magnetic tape, and CD ROM. System software used: Text Data Retrieval System (TDRS).

Information Contained: Response technologies for oil and hazardous material emergencies. Toxicity data, safety data, regulatory information, response information, transportation and disposal information for oil and hazardous substances.

Information Source: Published literature from USEPA

Dissemination Method: Chemical Information Systems (+1-301-321-8440); microfilm and magnetic tape: National Technical Information Service (+1-703-487-4650); CD-ROM: Micromedex, Inc (+1-800-525-9083) and Silver Platter Information (+1-617-969-2332).

Users, Accessibility, Cost: Used by ERD and Superfund including on site coordinators and response personnel. Also used by foreign governments and the private sector. Services are publicly available. Costs vary by vendor.

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Category A Systems

PPIC (Envirosense)

Category A

System Name:	Pollution Prevention Information Clearinghouse		
Technologies Covered:	Cleaner Production, Energy, Water, Air, Noise and Vibration, Land and Agriculture		
Information Format:	full-text	Language *:	EN
		Dissemination **:	OL, QR
Accessibility:	public	Size:	173
Costs:	free of charge	Time Span:	1990
Coverage:	national	Up-dates:	continuous
System Owner:	United States Environmental Protection Agency (USEPA)		
Branch:	Office of Environmental Engineering and Technology Development	Contact:	Ms. Beth Anderson or Mr. Myles Morse
Address:	401 M Street, SW 7409, Washington, DC 20460	Tel:	+1-202-260-1023 or 3161
		Fax:	+1-202-260-0178
Location:	United States	E-mail:	ppic@epamail.epa.gov
Internet/WWW:	http://es.inel.gov		

System Description: Clearinghouse using Bulletin Board System including the Pollution Prevention Exchange System (PIES), also known as Enviroene.

Information Contained: Cleaner production (pollution prevention) source reduction, recycling, life cycle assessment, environmental labeling, safer substitutes. Case studies, programs and technology descriptions.

Information Source: USEPA programs related to specific technologies. Reference unit includes training materials, conference proceedings, journals and government documents.

Dissemination Method: Query-referral service. On-line system: tel. +1-703-908-2092; modem settings: databit=8, parity=n, stop bits=1, speed=1200, 2400 or 9600 bauds.

Users, Accessibility, Cost: US and international governments, industry & trade associations, private/public institutions, public interest groups and academia. Free of charge.

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Category A Systems

RBLC

Category A

System Name:	RACT/BACT/LAER Clearinghouse		
Technologies Covered:	Air		
Information Format:	full-text, others	Language *:	EN
		Dissemination **:	OL, QR
Accessibility:	public	Size:	3,500
Costs:	free of charge	Time Span:	1978
Coverage:	national	Up-dates:	weekly
System Owner:	United States Environmental Protection Agency (USEPA)		
Branch:	Office of Air Quality Planning and Standards, Info. Transfer & Program Integration Division	Contact:	Mr. Joseph Steigerwald or Mr.Bob Blaszczak
Address:	MD-13, Research Triangle Park, NC 27711	Tel:	+1-919-541-0800
		Fax:	+1-919-541-0072
Location:	United States	E-mail:	blaszczak.bob@epamail.epa.gov
Internet/WWW:	http://ttnwww.rtpnc.epa.gov		

System Description: Reasonably Available Control Technology, Best Available Control Technology, Lowest Available Emission Rate Clearinghouse: electronic bulletin board system on the OAQPS Technology Transfer Network BBS. Also operates the Control Technology Centre Hotline (tel: +1-919-541-0800).

Information Contained: Air pollution control technologies and pollution prevention methods as applied to emission sources in the US. Contains reports, documents, software developed by CTC to evaluate control/prevention technologies for air pollution sources. Summaries of technologies, emission limits, costs, etc applied to major sources in US by state and local agencies. Summary of EPA regulations in a similar format.

Information Source: USEPA Office of Air Quality Planning and Standards.

Dissemination Method: Accessible via modem (tel. 1-919-541-5742) up to 14,000 bps. Setting should be 8 databits, no parity, 1 stop bits, terminal emulation VT100 or VT/ANSI, Duplex is full. Also available via Internet at http://ttnwww.rtpnc.epa.gov

Users, Accessibility, Cost: Database accessible 24 hours a day. 7 days a week except Monday morning 8-12 EST when the system is down for maintenance. Free of charge except for cost to user of telephone or internet connection.

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Category A Systems

RENTEK

Category A

System Name:	Information System on Cleaner Technologies		
Technologies Covered:	Cleaner Production, Water, Air		
Information Format:	full-text	Language *:	DA
		Dissemination **:	DK
Accessibility:	restricted	Size:	4,000
Costs:	one-time purchase	Time Span:	1989
Coverage:	national	Up-dates:	not known
System Owner:	Danish Environmental Protection Agency		
Branch:		Contact:	Mr. Peter Schaarup
Address:	29 Strandgade, Copenhagen K	Tel:	+45-32-660100
		Fax:	+45-32-660479
Location:	Denmark	E-mail:	
Internet/WWW:			

System Description: 5 diskettes for PC use, commercial software.

Information Contained: Industrial cleaner production and pollution control technologies for iron and metals, wood and furniture, plastics manufacturing and food processing (fish only dairy, vegetables and meat to be added). Technology descriptions, possible alternatives, environmental issues connected with process technology, materials and substances. Each entry describes a unit process. Covers 80-90% of unit operations in Denmark.

Information Source: The information is based on a network of experts from universities and technical institutes.

Dissemination Method: Diskettes.

Users, Accessibility, Cost: Local environmental authorities and private enterprises in Denmark. Purchase of the system costs $1000.

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Category A Systems

RERIC

Category A

System Name:	Regional Energy Resources Information Center		
Technologies Covered:	Energy		
Information Format:	bibliographic, abstracts	Language *:	EN
		Dissemination **:	OL, HC
Accessibility:	restricted	Size:	9,200
Costs:	subscription, usage charge	Time Span:	1981 to date
Coverage:	international	Up-dates:	monthly
System Owner:	Asian Institute of Technology (AIT)		
Branch:	Center for Library and Information Resources (CLAIR)	Contact:	Mrs. Lilia R. Austriaco, Manager
Address:	P.O. Box 4, Klong Luang 12120	Tel:	+66-2-524-5866
		Fax:	+66-2-524-5870
Location:	Thailand	E-mail:	enreric@ait.ac.th
Internet/WWW:	http://www.ait.ac.th/clair/reric1.html		

System Description: Formerly the Renewable Energy Information Center set up in May 1978 to collect and repackage information on various aspects of energy. The database was made using CDS/ISIS software from UNESCO.

Information Contained: Energy planning, energy conservation, renewable energy resources, solar, wind and biomass energy and small-scale hydro-power. Bibliographic database on energy and related topics using CDS/ISIS software from UNESCO. Includes abstracts of monographs, theses, research reports, conference proceedings and periodicals dealing with energy, and environmentally sound and energy efficient technology.

Information Source: Abstracts, monographs, thesis, research reports, conference proceedings, and articles from periodicals on energy and related topics available at AIT's Center for Library and Information Resources (CLAIR).

Dissemination Method: The center provides reference, referral and reprographic services on energy and related topics. It also publishes several materials on the subject.

Users, Accessibility, Cost: Main users are academic institutions, industry and national governments. RERIC members pay annual membership fee.

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Category A Systems

TISGLOW

Category A

System Name:	TERI Information Service on Global Warming		
Technologies Covered:	Energy, Global Environment		
Information Format:	full-text	Language *:	EN
		Dissemination **:	HC
Accessibility:	public	Size:	not known
Costs:	one-time purchase	Time Span:	1995 to date
Coverage:	national	Up-dates:	not known
System Owner:	Tata Energy Research Institute (TERI)		
Branch:	Information Centre on Global Warming	Contact:	Mr. B. Anil Kumar
Address:	Darbari Seth Block, India Habitat Centre, Loth Road, New Delhi 110003	Tel:	+91-11-460-1550/462-2246
		Fax:	+91-11-462-1770
Location:	India	E-mail:	banilk@teri.ernet.in
Internet/WWW:			

System Description: Database.

Information Contained: Greenhouse gases, conservation of non-renewable energy sources, power generation using fossil fuels. Descriptions, status, cost, environmental performances, efficiency, conservation potential, applicability and remarks on power generation technology options.

Information Source: Not known.

Dissemination Method: Hard copy.

Users, Accessibility, Cost: US$50 annual subscription for industrialized countries, US$35 for developing countries. (1997 onwards).

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*** OL=on-line, DK=diskette, CD=CD ROM, MT=magnetic tape, QR=query response, HC=hard copy*

Category A Systems

VISITT

Category A

System Name:	Vendor Information System for Innovative Treatment Technologies		
Technologies Covered:	Land and Agriculture, Solid Waste		
Information Format:	directory, bibliographic	Language *:	EN
		Dissemination **:	OL, DK
Accessibility:	public	Size:	231
Costs:	free of charge	Time Span:	1995 to date
Coverage:	national	Up-dates:	annually
System Owner:	United States Environmental Protection Agency (USEPA)		
Branch:	Office of Solid Waste and Emergency Response	Contact:	Mr. Carl Ma
Address:	Tech. Inno. Office (5102G), USEPA, 401M St. SW, Washington, DC 20460	Tel:	+1-703-603-9903
		Fax:	+1-703-603-9135
Location:	United States	E-mail:	ma.carl@epamail.epa.com
Internet/WWW:	http://clu-in.com		

System Description: Foxpro with Clipper interface; database is compiled and requires no other software to operate. Runs on PC with at least 640K of RAM DOS operating system of at least version 3.3 and 4MB of hard disk storage. Diskette accompanied by a user manual. It is an interactive system that offers a variety of reporting, processing and printing capabilities.

Information Contained: Innovative treatment technologies for contaminated site cleanup, groundwater, soil, sludge and sediments. Information provided by 141 US vendors of 231 innovative technologies –bench, pilot, and full-scale –to treat ground water in situ, soils, sludges, and sediments. Information on each technology includes the vendor name, address and phone number technology description, highlights, and limitations, contamination and matrix treated, project and performance data, available hardware, unit price information, treatability study capabilities and literature references.

Information Source: Information is provided by companies.

Dissemination Method: Currently available on diskette for PCs with at least 640K of RAM, DOS 3.3 or higher (IBM compatible) and 3 MB storage space. USEPA is studying feasibility of on-line system through existing facility.

Users, Accessibility, Cost: Main users include remediation professionals, EPA regional personnel, technology developers and vendors. To become a registered user send company name, fax number, address, phone number and diskette size contact the National Centre for Environmental Publications and Information (NCEPI) at Tel:513 891 6685. Free of charge.

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Category A Systems

WAST

Category A

System Name:	WasteInfo		
Technologies Covered:	Solid Waste, Hazardous Waste		
Information Format:	bibliographic, abstracts	Language *:	EN
		Dissemination **:	OL, CD, HC
Accessibility:	public	Size:	86,000
Costs:	varies	Time Span:	1970 to date
Coverage:	national	Up-dates:	quarterly
System Owner:	Waste Management Information Bureau		
Branch:		Contact:	Ms. D.E. Silver
Address:	B7.12 Harwell Laboratory, Harwell, OX11 ORA	Tel:	+44-1235-433442
		Fax:	+44-1235-432854
Location:	United Kingdom	E-mail:	
Internet/WWW:			

System Description: Database.

Information Contained: All aspects of waste disposal and treatment including landfill, incineration, biological or chemical treatment and separation techniques and waste recycling. Abstracts and bibliographic citations on all aspects of waste disposal and treatment and separation techniques, waste recycling, impact of wastes on the environment, and waste management policies, guidelines, legislation and regulation.

Information Source: Government agencies involved in waste management.

Dissemination Method: On-line via Orbit/Questel, CD-ROM via SilverPlatter Information, Inc., and hardcopy through the publication "Waste and Environment Today".

Users, Accessibility, Cost: International agencies, national and local governments, industry and academic institutions. Vendors determine charges/prices.

** EN=English, FR=French, GE=German, SP=Spanish, JP=Japanese, CH=Chinese, RU=Russian, DA=Danish, SWE=Swedish, AR=Arabic, OT=Other Language/s*

*** OL=on-line, DK=diskette, CD=CD ROM, MT=magnetic tape, QR=query response, HC=hard copy*

Category B Systems

AGRIS

Category B

System Name:	International Info System for the Agricultural Sciences and Technology		
Technologies Covered:	Energy, Water, Land and Agriculture		
Information Format:	bibliographic, abstracts	Language *:	EN, FR, SP, AR
		Dissemination **:	OL, DK, CD
Accessibility:	public	Size:	2,100,000
Costs:	varies	Time Span:	1975 to date
Coverage:	international	Up-dates:	monthly
System Owner:	Food and Agriculture Organization (FAO)		
Branch:	AGRIS/CARIS Coordinating Group	Contact:	Mr. Joseph R. Judy Chief
Address:	GIL A-108, Viale elle Terme di Caracalla, Rome 00100	Tel:	+39-6-522-54993
		Fax:	+39-6-522-54049
Location:	Italy	E-mail:	joseph.judy@fao.org
Internet/WWW:	http://www.fao.org/		

System Description: International information system for agriculture and technology.

Information Contained: Agricultural science and technology including agronomy, animal science, animals, aquaculture, biology, botany, breeding, crop management, dairy science, ecology, economics, energy, entomology, environment, fertilizers, food and agriculture, forestry, horticulture, natural resources, nutrition, pesticides, plant genetics, pollution, soils, veterinary science, water. Abstracts, summaries and bibliographic references.

Information Source: Literature sources include unique materials such as unpublished scientific and technical reports, theses, conference papers, and government publications.

Dissemination Method: CD-ROMs produced by SilverPlatter. On-line access through DIALOG, DIMDI, IAEA.(Current database only).

Users, Accessibility, Cost: Main users are research and academic institutions and government. Costs vary by vendor..

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*** OL=on-line, DK=diskette, CD=CD ROM, MT=magnetic tape, QR=query response, HC=hard copy*

Category B Systems

AQUALINE

Category B

System Name:	AQUALINE		
Technologies Covered:	Water		
Information Format:	bibliographic	Language *:	EN
		Dissemination **:	OL, CD
Accessibility:	public	Size:	167,000
Costs:	varies	Time Span:	1960 to date
Coverage:	international	Up-dates:	quarterly
System Owner:	Water Research Centre (WRc plc)		
Branch:		Contact:	Ms. Denise Bennett Marketing Coordinator
Address:	Frankland Road, Blagrove, Swindon SN5 8YF	Tel:	+44-1793-511711
		Fax:	+44-1793-511712
Location:	United Kingdom	E-mail:	
Internet/WWW:	http://www.wrcplc.co.uk/		

System Description: Database.

Information Contained: Water resources and supplies, water quality, monitoring and analysis of water and wastes. The Aqualine CD-ROM version contains 170,000 abstracts on all aspects of water resources and wastewater treatment technologies. The database is searchable by title, author, journal, country, document type, etc.

Information Source: Worldwide literature which include over 600 primary journals, conferences, reports and books.

Dissemination Method: Currently available on-line through Orbit. QUESTEL, ESA-IRS, journal, CD-ROM and hard copy.

Users, Accessibility, Cost: .International agencies, national and local government, industry and academic institutions. Vendors determine charges/prices. £1600 for CD-ROM annual subscription including quarterly updates. £600 for yearly journal subscription.

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*** OL=on-line, DK=diskette, CD=CD ROM, MT=magnetic tape, QR=query response, HC=hard copy*

Category B Systems

AQUASCI

Category B

System Name:	Aquatic Sciences and Fisheries Abstracts		
Technologies Covered:	Water, Air		
Information Format:	bibliographic	Language *:	EN
		Dissemination **:	OL, CD, HC
Accessibility:	public	Size:	480,000
Costs:	varies	Time Span:	1978
Coverage:	international	Up-dates:	monthly
System Owner:	Cambridge Scientific Abstracts (CSA)		
Branch:		Contact:	Cambridge Scientific Abstracts
Address:	7200 Wisconsin Ave., Bethesda, MD 20814	Tel:	+1-301-961-6751
		Fax:	+1-301-961-6720
Location:	United States	E-mail:	
Internet/WWW:	http://www.csa.com/		

System Description: Database.

Information Contained: Marine and freshwater environments. Bibliographic citations and abstracts on topics relating to the science, technology and management of marine and freshwater and brackish water environments.

Information Source: The database is compiled in cooperation with the Food and Agriculture Organization (FAO), the Office for Ocean Affairs and the Law of the Sea (OALOS), the Intergovernmental Oceanographic Commission (IOC), and the United Nations Environment Programme (UNEP), and a network of national research centres worldwide.

Dissemination Method: Available on-line through CSA and the following providers: STN, Dialog and ESA-IRS, and on CD-ROM via SilverPlatter. Related publications are: ASFA1: Biological Sciences and Living Resources, ASFA2: Ocean Technology, Policy and Non-Living Resources, ASFA3: Aquatic Pollution and Environmental Quality, ASFA Aquaculture Abstracts and ASFA Marine Biotechnology Abstracts.

Users, Accessibility, Cost: International agencies, national and local governments, industry and academic institutions. Charges vary by vendor..

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*** OL=on-line, DK=diskette, CD=CD ROM, MT=magnetic tape, QR=query response, HC=hard copy*

Category B Systems

CABI

Category B

System Name:	CAB ABSTRACTS		
Technologies Covered:	Land and Agriculture. Forestry, aspects of human health and the management of natural resources.		
Information Format:	bibliographic, abstracts	Language *:	EN, RU, GE, OT
		Dissemination **:	OL, CD, HC
Accessibility:	public	Size:	3,120,000
Costs:	varies	Time Span:	1973 to date
Coverage:	international	Up-dates:	monthly
System Owner:	CAB INTERNATIONAL (CABI)		
Branch:		Contact:	Ms. Andrea Powell
Address:	Wallingford, OX110 8DE	Tel:	+44-1491-832111
		Fax:	+44-1491-826090
Location:	United Kingdom	E-mail:	cabi@cabi.org
Internet/WWW:	http://www.cabi.org/		

System Description: Database.

Information Contained: All areas of agriculture and related sciences in the fields of applied biology, economics, engineering, sociology and medicine. Bibliographic references to information on the above fields.

Information Source: CAB ABSTRACTS journals covering animal breeding, genetics, animal health, bio-deterioration, dairy science, economics and sociology, engineering, entomology, nematology, forestry and forest products. Over 10,000 serial journals are scanned for articles.

Dissemination Method: On-line via STN, ESA-IRS, IMDI and Dialog/Datastar. CD-ROM available from SilverPlatter Information, Inc.

Users, Accessibility, Cost: Agro-chemical and pharmaceutical industries, government agencies, environmental planners, research and academic institutions. Prices vary by vendor..

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*** OL=on-line, DK=diskette, CD=CD ROM, MT=magnetic tape, QR=query response, HC=hard copy*

Category B Systems

CARIS

Category B

System Name:	Current Agricultural Research Information System		
Technologies Covered:	Energy, Land and Agriculture		
Information Format:	full-text	Language *:	EN, FR, SP
		Dissemination **:	OL, CD, DK, MT, HC
Accessibility:	public	Size:	26,994
Costs:	varies	Time Span:	1982 to date
Coverage:	international	Up-dates:	annually
System Owner:	Food and Agriculture Organization (FAO)		
Branch:	AGRIS/CARIS Coordinating Group	Contact:	Mr. A.I. Lebowitz
Address:	GIL A-108, Viale delle Terme di Caracalla Rome 00100	Tel:	+39-6-522-54993
		Fax:	+39-6-522-54049
Location:	Italy	E-mail:	gilsn@irmfao01 (bitnet)
Internet/WWW:	http://www.fao.org/		

System Description: Database and reference service on current agricultural research projects for developing and newly independent countries. Developed on CARIN, a Micro CDS/ISIS software application.

Information Contained: Agriculture, animal production, aquaculture, fisheries, food, forestry and plant production. Descriptions of each research projects including project title, objectives, starting and termination dates, address of the institution where the research is being carried out, and the names of researchers and their field of specialization.

Information Source: Agricultural research projects being carried out in, or on behalf of, developing countries.

Dissemination Method: Diskettes and magnetic tapes of the current database are distributed to participating centres upon request. Printed directories have also been produced and sent to the centres. The first CD-ROM version became available in 1994.

Users, Accessibility, Cost: Main users are agricultural researchers, research administrators, faculty, students, government officials and donor organizations. Primarily, the services of CARIS are provided free of charge, however, participating centres offer Selective Dissemination of Information (SDI) which entails some costs which vary per centre.

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*** OL=on-line, DK=diskette, CD=CD ROM, MT=magnetic tape, QR=query response, HC=hard copy*

Category B Systems

CC Search

Category B

System Name:	Current Contents Search		
Technologies Covered:	Land and Agriculture		
Information Format:	bibliographic	Language *:	EN
		Dissemination **:	OL, MT, HC
Accessibility:	public	Size:	
Costs:	subscription	Time Span:	
Coverage:	international	Up-dates:	weekly
System Owner:	Institute for Scientific Information (ISI)		
Branch:		Contact:	
Address:	3501 Market St., Philadelphia, PA 19104	Tel:	+1-215-386-0100
		Fax:	+1-215-386-6362
Location:	United States	E-mail:	
Internet/WWW:	http://www.isinet.com/		

System Description: Table of Contents in seven multi-disciplinary databases. Two databases are relevant: (1) Agriculture, Biology and Environmental Sciences, (2) Engineering, Computing ad Technology. Requires MS DOS, Windows or Apple systems.

Information Contained: Agriculture, environmental policy, life sciences. Bibliographic and abstracts include authors, publisher names and addresses, and subject keywords.

Information Source: Approximately 7,000 journals and books from throughout the world.

Dissemination Method: Diskette, CD-ROM, On-line, Magnetic tape and printed version also from Institute for Scientific Information (ISI).

Users, Accessibility, Cost: Annual lease: $15,000 (academic), $18,750 (corporate).

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*** OL=on-line, DK=diskette, CD=CD ROM, MT=magnetic tape, QR=query response, HC=hard copy*

Category B Systems

DTA

Category B

System Name:	The Database Technology Assessment (TA - Database)		
Technologies Covered:	Water, Air, Noise & Vibration, Solid Waste Management, Hazardous Waste Management, Energy, Cleaner Production, Land & Agriculture, Construction, Building & Engineering, Global Environment		
Information Format:	abstracts, bibliographic, full-text	Language *:	EN, GE
		Dissemination **:	OL, CD
Accessibility:	public	Size:	7,000
Costs:	varies	Time Span:	1975 to date
Coverage:	international	Up-dates:	quarterly
System Owner:	Forschungszentrum Karlsruhe FZK (Research Centre Karlsruhe)		
Branch:	Institute for Technology Assessment and System Analysis (ITAS)	Contact:	Mr. Reinhard Coenen
Address:	P.O. Box 3640, D-76021 Karlsruhe	Tel:	+49-7247-823994 or 822500
		Fax:	+49-7247-824806
Location:	Germany	E-mail:	kupsch@afas.klk.de
Internet/WWW:	http://www.tab.fzk.de/eng/itaseng.html or http://www.fiz-karlsruhe.de/ta.html		

System Description: Hardware requirement for the CD-ROM: IBM PC AT, PS/2, operating system MS DOS 5.0 (or higher version); MSCDEX 2.1(or higher); CD-ROM drive (ISO 9660 standard); 2 MB on hard disk.

Information Contained: Key technologies: Biotechnology; data processing, information and communication; manufacturing, incl. CAD, CAM, CIM; laser-, opto- and micro-electronics; new materials. Special topics: Use of technology in industrial branches and other areas; effects of the use of technology on the environment; impacts of technology on economy, society and international relations; energy systems, energy supply, raw materials; concepts and methodology of TA and TA related activities. Directory of 496 institutions in 16 countries as well as international institutions, information on 2332 research projects and 5255 bibliographic citations.

Information Source: Institutions carrying-out projects on technology assessments; journals, books, annual reports and non-conventional literature.

Dissemination Method: CD-ROM and on-line via STN International.

Users, Accessibility, Cost: Main users are technology assessment specialists in international agencies, national governments, industry and academic institutions. CD-ROM: Vendor: STN International. DM1500 (update DM1200); for universities DM1000 (update DM700.-) and for TA cooperative partners DM750 (update DM450.-) For on-line cost and access contact STN International (Tel: +49-7247-808555).

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*** OL=on-line, DK=diskette, CD=CD ROM, MT=magnetic tape, QR=query response, HC=hard copy*

Category B Systems

Energyline

Category B

System Name:	Energyline Abstracts Plus		
Technologies Covered:	Energy		
Information Format:	bibliographic, abstracts	Language *:	EN
		Dissemination **:	OL, CD, HC
Accessibility:	public	Size:	167,000
Costs:	varies	Time Span:	1975 to 1993
Coverage:	international	Up-dates:	closed
System Owner:	Congressional Information Service		
Branch:		Contact:	Bowker Electronic Publishing
Address:	Suite 800, 4520 East-West Highway, Bethesda, MD 20814-3389	Tel:	+1-212-464-6800
		Fax:	+1-212-645-0475
Location:	United States	E-mail:	
Internet/WWW:	http://www.cispubs.com/		

System Description: Database. Minimum hardware requirements: IBM PC, PS/2 or compatible; 640K memory; 20MB HD; MS DOS 3.1 or higher; CD-ROM drive.

Information Contained: Economics, US policy and planning, international political and economic issues, research and development, resources and reserves, environmental impact, electric power transmission and storage, fuel production, fuel transport, nuclear power, transportation, and residential consumption. Citations and abstracts on all aspects of energy production, conservation, management and consumption.

Information Source: Journals, reports, surveys, monographs, newspaper articles, conference proceedings and other materials are screened to provide comprehensive coverage of energy information.

Dissemination Method: Available on-line via Orbit/Questel, ESA-IRS and Dialog, and on CD-ROM through Bowker Electronic Publishing. A printed version entitled "Energy Information Abstracts" is also available.

Users, Accessibility, Cost: Academic and research communities. Charges vary by vendor.

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*** OL=on-line, DK=diskette, CD=CD ROM, MT=magnetic tape, QR=query response, HC=hard copy*

Category B Systems

Enviroline

Category B

System Name:	Enviroline		
Technologies Covered:	Water, Air, Land and Agriculture, Solid Waste		
Information Format:	bibliographic	Language *:	EN
		Dissemination **:	OL, MT, HC
Accessibility:	public	Size:	150,000
Costs:	usage charge	Time Span:	1971 to date
Coverage:	international	Up-dates:	varies
System Owner:	Congressional Information Service		
Branch:		Contact:	Ms. Pat Simons
Address:	Suite 800, 4520 East-West Highway, Bethesda, MD 20814-3389	Tel:	+1-301-654-1550
		Fax:	+1-301-657-3203
Location:	United States	E-mail:	
Internet/WWW:	http://www.cispubs.com/		

System Description: Database.

Information Contained: Scientific, engineering, political and socio-economic aspects of environmental research, resources, issues and awareness. Bibliographic; contains more than 150,000 citations (with abstracts from 1979) to a broad range of issues and topics related to the environment and the management and use of natural resources.

Information Source: All types of printed literature including conference papers, research reports, government documents and journal articles. More than 3500 scientific, technical, business, trade and professional journals scanned.

Dissemination Method: Magnetic tape and hard copy. The print version is available from Bowker Electronic Publishing.

Users, Accessibility, Cost: Government, industry and academic organizations. Contact CIS for pricing information.

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*** OL=on-line, DK=diskette, CD=CD ROM, MT=magnetic tape, QR=query response, HC=hard copy*

Category B Systems

GETNET

Category B

System Name:	Global Environmental Technology Network		
Technologies Covered:	Cleaner Production, Energy, Water, Solid Waste, Land and Agriculture, Global Environment		
Information Format:	full-text, directory	Language *:	EN
		Dissemination **:	OL, QR
Accessibility:	public	Size:	
Costs:	free of charge	Time Span:	1991
Coverage:	international	Up-dates:	not known
System Owner:	World Health Organisation (WHO)		
Branch:	EHE/PEP	Contact:	Mr. Frank Lapensee
Address:	20, Avenue Appia, Geneva CH-1211	Tel:	+41-22-791-3754
		Fax:	+41-22-791-0746/4123
Location:	Switzerland	E-mail:	lapensee@who.ch
Internet/WWW:			

System Description: Network that links specialists in environmental technology. Limited literature search capabilities. Set up in 1991 with funds from the Norwegian Government, presently supported from funds of the United States government.

Information Contained: Environmental pollution control technologies. Human health and safety, occupational health. List of participating members of GETNET. References to relevant experts and libraries as well as information on latest activities.

Information Source: Training material and workshop on assessment of sources of air, water and land pollution: a guide to rapid source inventory techniques and their use in formulating control strategies. Training guides under development on health impacts from motor vehicle air pollution and environmental control measures.

Dissemination Method: Access via internet and query response via mail as well.

Users, Accessibility, Cost: No restrictions on access. Free of charge via the Internet.

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Category B Systems

HOMS

Category B

System Name:	Hydrological Operational Multi-Purpose System		
Technologies Covered:	Water		
Information Format:	full-text	Language *:	EN, SP, RU
		Dissemination **:	OL, QR, DK, HC
Accessibility:	restricted	Size:	446
Costs:	free of charge	Time Span:	1981 to date
Coverage:	international	Up-dates:	annually
System Owner:	World Meteorological Organisation (WMO)		
Branch:	Hydrology and Water Resources Department	Contact:	Dr. J. B. Miller
Address:	P.O. Box 2300, Geneva 2, CH-1211	Tel:	+41-22-730-8407
		Fax:	+41-22-734-8250
Location:	Switzerland	E-mail:	jmiller@www.wmo.ch
Internet/WWW:	http://www.wmo.ch/web/homs/hwrphome.html		

System Description: Queries through national reference centres each provided direct reference service to users through HOMS reference manual.

Information Contained: Hydrology and water resources system covering assessment, design and management aspects. Descriptions of over 400 components such as computer software, manuals and instruments for collecting, storing and analyzing hydrological data and for modeling hydrological and water resource systems.

Information Source: All technologies contributed by hydrological services of WMO member countries.

Dissemination Method: Provides computer software and hard copy of publications.

Users, Accessibility, Cost: Through designated HOMS National Reference Centres of which there are currently over 100. Free of charge.

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Category B Systems

JISCT- E

Category B

System Name:	JICST - English File		
Technologies Covered:	Energy, Water, Building and Engineering, Land and Agriculture		
Information Format:	abstracts	Language *:	EN
		Dissemination **:	OL
Accessibility:	public	Size:	2,020,000
Costs:	usage charge	Time Span:	1985 to date
Coverage:	international	Up-dates:	bi-monthly
System Owner:	Japan Information Centre of Science and Technology (JICST)		
Branch:	Office of International Affairs	Contact:	Mr. Kimihiko Saito General Manager
Address:	5-3 Yonbancho, Chiyoda-ku, Tokyo 102	Tel:	+81-3-5214-8403
		Fax:	+81-3-5214-8430
Location:	Japan	E-mail:	k2saitou@mr.jicst.go.jp
Internet/WWW:	http://www.jicst.go.jp/		

System Description: Database. Maintained and operated by the JICST and made available through JOIS (Japan On-line Information System) and through STN International.

Information Contained: The information contained covers medicine, agriculture, forestry, fisheries, mechanical engineering chemistry and chemical engineering, metallurgy, mining and earth science, biological science, construction engineering, management science, electrical engineering and electronics, physics, environmental engineering, nuclear and energy engineering. Abstracts of literature ranging from journals and technical reports to periodicals and conference proceedings.

Information Source: Information is derived from Japanese journals, technical reports, conference proceedings, public reports and pre-prints from 1985 up to the present.

Dissemination Method: JOIS is a commercial on-line system. It can be accessed directly via PC and modem or through gateway network such as Marunet and Kinocosmonet. JISCT-E is also available through the Science and Technology Network (STN), which consists of 180 databases.

Users, Accessibility, Cost: There are approximately 10,000 user organizations and individuals in Japan. JISCT charges a monthly fee (¥1000) for the user password. The user then pays an hourly rate which differs according to the database being accessed. Charges are also made for the downloading of information while on-line.

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*** OL=on-line, DK=diskette, CD=CD ROM, MT=magnetic tape, QR=query response, HC=hard copy*

Category B Systems

POLLUABS

Category B

System Name:	Pollution Abstracts		
Technologies Covered:	Water, Air, Noise and Vibration, Land and Agriculture, Solid Waste, Hazardous Waste		
Information Format:	bibliographic, abstracts	Language *:	EN
		Dissemination **:	OL, CD, MT, HC
Accessibility:	public	Size:	200,000
Costs:	subscription	Time Span:	1970 to date
Coverage:	international	Up-dates:	bi-monthly
System Owner:	Cambridge Scientific Abstracts (CSA)		
Branch:		Contact:	Cambridge Scientific Abstracts
Address:	7200 Wisconsin Ave., Suite 601, Bethesda, MD 20814-4823	Tel:	+1-301-961-6750
		Fax:	+1-301-961-6720
Location:	United States	E-mail:	
Internet/WWW:	http://www.csa.com/		

System Description: Database.

Information Contained: Bibliographic: contains about 200,000 citations, with abstracts, to the worldwide technical and non-technical literature on pollution research, sources and controls. Covers air, water, land, thermal, noise, and radiological pollution; pesticides; sewage and waste treatments; environmental action; and toxicology and health.

Information Source: 2500 primary sources including journals, conference papers, monographs, government reports, books and research reports.

Dissemination Method: Magnetic tape, print version also by Cambridge Scientific Abstracts.

Users, Accessibility, Cost: Via vendors and hosts including BRS, Datastar, DIALOG, ESA-IRS, TECHDATA, BIOSIS. Available on a lease basis. Current year, $7100; single-year archival file, $4300.

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*** OL=on-line, DK=diskette, CD=CD ROM, MT=magnetic tape, QR=query response, HC=hard copy*

Category B Systems

SWRA

Category B

System Name:	Selected Water Resources Abstracts		
Technologies Covered:	Water		
Information Format:	bibliographic, abstracts	Language *:	EN
		Dissemination **:	OL
Accessibility:	public	Size:	270,000
Costs:	free of charge	Time Span:	1968
Coverage:	national	Up-dates:	monthly
System Owner:	United States Geological Survey (USGS)		
Branch:	Water Resources Information Centre	Contact:	USGS, Water Resources Information Centre
Address:	USGS National Center, 12201 Sunrise Valley Drive, Reston, VA 20192	Tel:	+1-703-860-6531
		Fax:	
Location:	United States	E-mail:	h2info@usgs.gov
Internet/WWW:	http://h2o.er.usgs.gov/		

System Description: Database.

Information Contained: Comprehensive range of water and water-related topics including conservation, control, use, management, engineering and legal aspects. Abstracts and bibliographic citations.

Information Source: Literature and reports submitted to the US government by federal, state, and local agencies and universities involved in water research.

Dissemination Method: Available on-line via ESA-IRS and through the USGS homepage on the Internet.

Users, Accessibility, Cost: Used by US state agencies, consultant engineers, local officials, researchers and the public. On-line access charges are determined by the vendor. Free of charge via on-line access to USGS.

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*** OL=on-line, DK=diskette, CD=CD ROM, MT=magnetic tape, QR=query response, HC=hard copy*

Category B Systems

TOXLINE

Category B

System Name:	TOXLINE		
Technologies Covered:	Land and Agriculture, Hazardous Waste		
Information Format:	bibliographic, abstracts	Language *:	EN
		Dissemination **:	MT, HC
Accessibility:	public	Size:	1,600,000
Costs:	usage charge	Time Span:	varies by file
Coverage:	international	Up-dates:	monthly
System Owner:	National Library of Medicine (NLM)		
Branch:	Toxicology Information Program (TIP)	Contact:	
Address:	8600 Rockville Pike, Bethesda, MD 20894	Tel:	+1-301-496-1131
		Fax:	
Location:	United States	E-mail:	
Internet/WWW:	http://www.nlm.nih.gov/		

System Description: Database consisting of nine files, namely: Aneuploidy (ANEUPL), CIS Abstracts (International Labor Office), Environmental Mutagen Information Center (EMIC), Environmental Teratology Information Center (ETIC), HMTC Abstract Bulletin, NIOSH Technical Information Center Database (NIOSHTIC), Pesticides Abstracts (PESTAB), Toxicity Bibliography (TOXBIB), Toxicology Documentation and Data Depository (NTIS),TOXLIT. Also brings together information from other on-line or published services on toxicology such as Medline and Biosis Previews.

Information Contained: Biomedicine, chemical industry, environmental policy, occupational safety, pesticides, toxicology and waste management. Contains more than 1.6 million citations, with abstracts, to the worldwide literature in all areas of toxicology, including chemicals and pharmaceuticals, pesticides, environmental pollutants, and mutagens and teratogens.

Information Source: Publications held at the National Library of medicine and other sources dealing with toxicology.

Dissemination Method: Magnetic tape; printed version also by US National Library of Medicine (NLM), Toxicology Information Program (TIP).

Users, Accessibility, Cost: Main users are government agencies, academic and research institutions, and pharmaceutical companies. Contact the National Library of Medicine for pricing information.

** EN=English, FR=French, GE=German, SP=Spanish, JP=Japanese, CH=Chinese, RU=Russian, DA=Danish, SWE=Swedish, AR=Arabic, OT=Other Language/s*

*** OL=on-line, DK=diskette, CD=CD ROM, MT=magnetic tape, QR=query response, HC=hard copy*

Category C Systems

Acid Rain

Category C

System Name:	Acid Rain		
Technologies Covered:	Global Environment		
Information Format:	bibliographic	Language *:	EN
		Dissemination **:	CD
Accessibility:	public	Size:	4,780
Costs:	lease	Time Span:	1984 to 1990
Coverage:	international	Up-dates:	closed
System Owner:	Congressional Information Service		
Branch:		Contact:	User Support
Address:	Suite 800, 4520 East-West Highway, Bethesda, MD 20814	Tel:	+1-301-654-1550
		Fax:	+1-301-654-4033
Location:	United States	E-mail:	
Internet/WWW:	http://www.cispubs.com		

System Description: Database.

Information Contained: Bibliographic; contains more than 4000 citations, with abstracts, to the worldwide literature on the sources of acid rain and its effects on the environment and human life. Covers atmospheric processes, deposition monitoring, impact on aquatic and terrestrial systems, control technologies, economic and health issues; and U.S. policy and planning.

Information Source: Not known.

Dissemination Method: Closed.

Users, Accessibility, Cost: Closed.

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*** OL=on-line, DK=diskette, CD=CD ROM, MT=magnetic tape, QR=query response, HC=hard copy*

Category C Systems

ARET

Category C

System Name:	Appropriate Renewable Energy Technologies		
Technologies Covered:	Cleaner Production, Energy, Water, Land and Agriculture, Solid Waste, Hazardous Waste, Global Environment, Building and Engineering		
Information Format:	not known	Language *:	EN
		Dissemination **:	DK, CD, HC
Accessibility:	restricted	Size:	not known
Costs:	not known	Time Span:	not known
Coverage:	national	Up-dates:	not known
System Owner:	Ministry of Energy, Mines and Water Resources - Eritrea		
Branch:	Planning and Programming Division	Contact:	Dr. Semere Habtetsion
Address:	P.O. Box 5285, Asmara	Tel:	+291-1-127-944
		Fax:	+291-1-127-652
Location:	Eritrea	E-mail:	
Internet/WWW:			

System Description: Not Known.

Information Contained: Renewable Energy Technologies (both indigenous and external sources of technologies). Solar PV, solar thermal, wind power, hydropower, biogasification, geothermal, improved traditional cooking stoves etc. Relevant materials sent by numerous consultants and suppliers of finished products and LEAP software for Energy and Environment.

Information Source: The Energy Centre (under establishment), CC: INFO, GEF publications

Dissemination Method: CD-ROM, diskette, hard copy currently available. On-line accessibility being envisaged.

Users, Accessibility, Cost: Access restricted to staff in the Department of Energy. Costs not known.

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*** OL=on-line, DK=diskette, CD=CD ROM, MT=magnetic tape, QR=query response, HC=hard copy*

Category C Systems

ASSET

Category C

System Name:	Abstracts on Selected Solar Energy Technologies		
Technologies Covered:	Energy		
Information Format:	abstracts	Language *:	EN
		Dissemination **:	DK, HC
Accessibility:	public	Size:	not known
Costs:	subscription	Time Span:	1979 to date
Coverage:	regional	Up-dates:	quarterly
System Owner:	Tata Energy Research Institute (TERI)		
Branch:	Documentation and Information Centre	Contact:	Mrs. Nalini Ranganathan
Address:	Darbari Seth Block, India Habitat Centre, Lodi Road, New Delhi 110003	Tel:	+91-11-462-2246
		Fax:	+91-11-462-1770
Location:	India	E-mail:	mailbox@teri.ernet.in
Internet/WWW:			

System Description: Designed using micro CDS/ISIS software package.

Information Contained: Non conventional energy technologies - solar, bioconversion, wind and energy storage. Technical specifications and research abstracts.

Information Source: From existing databases such as JICST and the US Department of Energy Technical Information Centre.

Dissemination Method: Quarterly publication of abstracts.

Users, Accessibility, Cost: Academics and government researchers in developing countries. Contact made by fax or mail. Previously subsidized by UNU. Developed country subscription is $80 developing country $50.

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*** OL=on-line, DK=diskette, CD=CD ROM, MT=magnetic tape, QR=query response, HC=hard copy*

Category C Systems

AXSES InfoATLAS

Category C

System Name:	AXSES InfoATLAS		
Technologies Covered:	Water		
Information Format:	full-text, image	Language *:	EN
		Dissemination **:	DK, HC
Accessibility:	public	Size:	not known
Costs:	one-time purchase	Time Span:	1961 to date
Coverage:	national	Up-dates:	irregularly
System Owner:	AXSES Information Systems		
Branch:		Contact:	AXSES Information Systems
Address:	Boutiliers Point, Halifax, Nova Scotia, BOJ 1GO	Tel:	+1-902-826-2440
		Fax:	+1-902-826-7274
Location:	Canada	E-mail:	lclayton@fox.nstn.ca
Internet/WWW:	http://www.axses.caribnet.net		

System Description: Software: GeoAXSES from Axses Information Systems; Hardware: IBM PC or compatible ; floppy drive; 40MB hard disk; MS DOS 3.1 or higher; EGA or monochrome card and monitor.

Information Contained: Aquatic Sciences; Environment-Environmental Policy; Maps-Map-DataOceans

Information Source: Not known.

Dissemination Method: Diskette; magnetic tape; printed version also by Axes.

Users, Accessibility, Cost: Canadian $2000.

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*** OL=on-line, DK=diskette, CD=CD ROM, MT=magnetic tape, QR=query response, HC=hard copy*

Category C Systems

CEABA

Category C

System Name:	Chemical Engineering and Biotechnology Abstracts		
Technologies Covered:	Water, Air, Solid Waste Management, Hazardous Waste Management, Energy, Cleaner Production, Land & Agriculture, Construction, Building & Engineering, and Global Environment		
Information Format:	abstracts	Language *:	EN, GE
		Dissemination **:	OL, CD, MT, HC
Accessibility:	public	Size:	350,000
Costs:	varies	Time Span:	1975 to date
Coverage:	international	Up-dates:	monthly
System Owner:	DECHEMA e.V.(Germany), FIZ CHEMIE GmbH(Germany), Royal Soc. of Chem.UK)		
Branch:		Contact:	Dr. Neil Forsyth
Address:	Theodor-Heuss-Allee 25, D-60486, Frankfurt am Main, Frankfurt	Tel:	+49-69-7564-349
		Fax:	+49-69-7564-201
Location:	Germany	E-mail:	iud@dechema.de
Internet/WWW:	http://www.dechema.de/		

System Description: Database.

Information Contained: Chemical Engineering in biotechnology; manufacture of organic and inorganic materials; processing of waters, effluents, sewage and wastes of all sorts; recovery and processing of petroleum; energy and raw materials; equipment, machine and plant construction; safety and environmental protection.

Information Source: More than 500 of the world's primary chemical and process engineering journals are scanned to compile the database. Other sources are books, conference papers, reports, dissertations, and some non-conventional literature.

Dissemination Method: Magnetic tape, CD-ROM and on-line. On-line via Orbit/Questel and Datastar. Print version also by DECHEMA and Royal Society of Chemistry.

Users, Accessibility, Cost: Main users are chemical/process engineers and related professionals. Charges vary by vendor.

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*** OL=on-line, DK=diskette, CD=CD ROM, MT=magnetic tape, QR=query response, HC=hard copy*

Category C Systems

CES

Category C

System Name:	Canadian Environmental Solutions		
Technologies Covered:	Energy, Water, Air, Noise and Vibration, Land and Agriculture, Solid Waste		
Information Format:	directory, full-text	Language *:	EN, FR, SP
		Dissemination **:	OL, CD, DK
Accessibility:	public	Size:	1,000
Costs:	one-time purchase	Time Span:	not known
Coverage:	international	Up-dates:	continuous
System Owner:	Industry Canada		
Branch:	Environmental Affairs Branch	Contact:	Environmental Affairs Branch
Address:	235 Queen Street, Ottawa, Ontario K1A 0H5	Tel:	+1-613-952-5437
		Fax:	+1-613-954-3430
Location:	Canada	E-mail:	envinet@ic.gc.ca
Internet/WWW:	http://info.ic.gc.ca/ic-data/		

System Description: Minimum requirements: IBM compatible PC with Windows; internet connection (for on-line access).

Information Contained: Industry: air, water and energy. CES currently addresses industry sector problems related to water, air, soil, research and development, and energy. It contains 500 environmental problems, 1000 solutions and their descriptions, along with 600 companies that can provide solutions.

Information Source: Not known.

Dissemination Method: CD-ROM, diskette, on-line.

Users, Accessibility, Cost: Private industry, governments, academics and consultants. One-time purchase.

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*** OL=on-line, DK=diskette, CD=CD ROM, MT=magnetic tape, QR=query response, HC=hard copy*

Category C Systems

CISEPI

Category C

System Name:	China's Information System for Environmental Protection Industry		
Technologies Covered:	Cleaner Production, Energy, Water		
Information Format:	abstracts, directory	Language *:	EN, CH
		Dissemination **:	OL, HC
Accessibility:	not known	Size:	not known
Costs:	not known	Time Span:	1995
Coverage:	national	Up-dates:	not known
System Owner:	Ministry of Engineering Industry-		
Branch:	Institute of Environmental Protection	Contact:	Mr. Lou Shangyou
Address:	2 Capital Gymnasium, Nanlu, Haidian, Beijing	Tel:	+86-1-839-3892/834-0088
		Fax:	+86-1-839-3748/834-0825
Location:	China	E-mail:	
Internet/WWW:			

System Description: Four databases : Products Database, Enterprise Database, Technology Database and Engineering Database.

Information Contained: Industrial pollution control, cleaner production, environmental impact assessment, water recycling, energy conservation, environmental management. Papers, reports and reviews. Information on companies which produce products, technologies for pollution control, in engineering industry, engineering projects design and construction, each entry also contains cost and price information.

Information Source: China EPA journal, bimonthly, Chinese with English abstracts (available from April 1995).

Dissemination Method: First two databases will be completed in 1995 and the other two in 1996. Will be made available for public access after completion.

Users, Accessibility, Cost: Not known.

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*** OL=on-line, DK=diskette, CD=CD ROM, MT=magnetic tape, QR=query response, HC=hard copy*

Category C Systems

CNISEP

Category C

System Name:	China's National Information System for Environmental Protection		
Technologies Covered:	Cleaner Production, Energy, Water, Air, Land and Agriculture		
Information Format:	directory, full-text	Language *:	EN, CH, JP
		Dissemination **:	OL.
Accessibility:	public	Size:	not known
Costs:	subscription	Time Span:	1996
Coverage:	national	Up-dates:	not known
System Owner:	Chinese Association of Environmental Protection Industry (CAEPI)		
Branch:		Contact:	Ms. Jiang Xiaoyu Deputy Secretary General
Address:	9 Sanlihe Road, Haidian, Beijing 100835	Tel:	+86-10-6839-3892
		Fax:	+86-10-6839-3748
Location:	China	E-mail:	
Internet/WWW:			

System Description: An information system consisting of seven databases: (1) Enterprises and Their Products; (2) New Environmental Technologies for Pollution Control; (3) Cleaner Production Technologies; (4) Pollution Sources; (5) Laws and Regulations; (6) Green Engineering; and (7) Periodicals for the Environment Industry. (Conceptual design completed, seeking financial support for development of system).

Information Contained: Environmental protection technologies including pollution control, pollution prevention, energy conservation and environmental management. Directory, catalogues, reports and bibliographic citations on technologies, products, enterprises, marketing, R&D, upcoming events, and training activities.

Information Source: From nationwide environmental survey, existing data banks including those of ICPIC, NEPA (National Environment Protection Agency) and the China Academy of Science, environmental corporations and enterprises, and from various publications.

Dissemination Method: Information will be disseminated through a network of on-line computers.

Users, Accessibility, Cost: Would be made available to national and international users including 3,000 member of the Chinese Association of Environmental Protection Industry. Costs to individual users have not been established as yet.

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*** OL=on-line, DK=diskette, CD=CD ROM, MT=magnetic tape, QR=query response, HC=hard copy*

Category C Systems

COMPENDEX

Category C

System Name:	Computerized Engineering Index		
Technologies Covered:	Energy, Air, Noise and Vibration		
Information Format:	bibliographic, abstracts, indexing	Language *:	EN
		Dissemination **:	OL, CD, MT, HC
Accessibility:	public	Size:	3,700,000
Costs:	varies	Time Span:	1969 to date
Coverage:	international	Up-dates:	weekly
System Owner:	Engineering Information Inc. (Ei)		
Branch:		Contact:	Ms. Ann Hutcheson Library Relations Coordinator
Address:	One Castle Point Terrace, Hoboken, NJ 07030-5996	Tel:	+1-201-216-8500 ext.675
		Fax:	+1-201-216-8532
Location:	United States	E-mail:	ei@ei.org
Internet/WWW:	http://www.ei.org/		

System Description: Database.

Information Contained: Civil engineering, environmental, geological and bio-engineering, electrical and electronics control engineering, chemical, agriculture and food engineering, industrial engineering and management. Contains citations and abstracts on all areas of engineering, including mechanical.

Information Source: Engineering literature, 2,600 professional trade journals, publications of engineering organizations, papers from conferences and symposia, technical reports. Merger of two formerly separate files: Compendex and Ei Engineering Meetings.

Dissemination Method: On-line via Orbit/Questel, DataStar/DIALOG, STN and ESA-IRS. CD-ROM available from Ei, Dialog and SilverPlatter. WWW from Ei. Tape, print, and hardcopy.

Users, Accessibility, Cost: Accessible through STN and from DIALOG and Engineering Information, Inc. Charges vary by vendor.

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*** OL=on-line, DK=diskette, CD=CD ROM, MT=magnetic tape, QR=query response, HC=hard copy*

Category C Systems

CPAS

Category C

System Name:	Clean Process Advisory System		
Technologies Covered:	Cleaner Production, Water, Land and Agriculture, Solid Waste, Building and Engineering		
Information Format:	software	Language *:	EN
		Dissemination **:	OL, DK
Accessibility:	public	Size:	not applicable
Costs:	not decided	Time Span:	1995
Coverage:	international	Up-dates:	not known
System Owner:	Michigan Technological University		
Branch:	Centre for Clean Industrial Treatment Technologies (CenCITT)	Contact:	Mr. David L. Stoh Information Manager
Address:	1400 Townsend Drive, Houghton, MI 4991	Tel:	+1-906-487-3143
		Fax:	+1-906-487-3292
Location:	United States	E-mail:	dlstoh@mtu.edu
Internet/WWW:	http://cpas.mtu.edu		

System Description: Software tools.

Information Contained: Pollution prevention, waste minimization, cleaner production, environmentally friendly construction technologies and land remediation. Pollution prevention process and product design system incorporating design information with clean process and product technology tools.

Information Source: Research undertaken at CenCITT.

Dissemination Method: Diskette and on-line.

Users, Accessibility, Cost: Main users will be product and process designers. Costs are yet to be decided.

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*** OL=on-line, DK=diskette, CD=CD ROM, MT=magnetic tape, QR=query response, HC=hard copy*

Category C Systems

EDAS

Category C

System Name:	Energy Design Advice Scheme		
Technologies Covered:	Energy, Building and Engineering		
Information Format:	full-text	Language *:	EN
		Dissemination **:	HC
Accessibility:	restricted	Size:	not known
Costs:	not known	Time Span:	1993
Coverage:	regional	Up-dates:	other (regular)
System Owner:	Energy Design Advice Scheme (EDAS)		
Branch:	School of the Built Environment	Contact:	Dr. Patrick Waterfield Regional Centre Manager
Address:	University of Ulster, Newtownabbey, BT37 OQB	Tel:	+44-1232-364090
		Fax:	+44-1232-364090
Location:	N. Ireland	E-mail:	p.waterfield@ulst.ac.uk
Internet/WWW:			

System Description: In-house database. PC-based DBase IV indexing system.

Information Contained: Energy and environment conscious design of buildings and services including energy in use and embodied energy (materials manufacture, construction process, etc.). Descriptions of systems and processes related to energy in buildings.

Information Source: All UK Government "Best Practice" documents related to energy in buildings, EU programme literature and product literature.

Dissemination Method: Hard copy only.

Users, Accessibility, Cost: At present only accessible at the center. Costs not known.

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*** OL=on-line, DK=diskette, CD=CD ROM, MT=magnetic tape, QR=query response, HC=hard copy*

Category C Systems

EDF-DOC

Category C

System Name:	Electricité de France Documentation		
Technologies Covered:	Energy, Solid Waste		
Information Format:	bibliographic, abstracts	Language *:	EN, FR
		Dissemination **:	OL, HC
Accessibility:	public	Size:	443,000
Costs:	varies	Time Span:	1972
Coverage:	international	Up-dates:	monthly
System Owner:	Electricité de France (EDF)		
Branch:	Service Information, Prospective et Norma lisation	Contact:	Ms. Sylvie Paurobally, Chef du Groupe, Unite Documentaire
Address:	1, Ave. du General de Gaulle, B.P. 408, F-92141 Clamart Cedex	Tel:	+33-1-40-42-24-98
		Fax:	+33-1-40-42-56-32
Location:	France	E-mail:	
Internet/WWW:			

System Description: Database.

Information Contained: Main subjects covered are energy sources, conventional, nuclear and hydroelectric power plants, electric power transmission and distribution, domestic and industrial applications of electricity, environmental pollution and waste disposal.

Information Source: Not known.

Dissemination Method: Accessible to EDF members only. No longer available via ESA or Questel.

Users, Accessibility, Cost: International and national agencies, utilities and the energy research community. Charges vary by vendor.

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*** OL=on-line, DK=diskette, CD=CD ROM, MT=magnetic tape, QR=query response, HC=hard copy*

Category C Systems

EEI Super Directory of Power Plant Environmental Data

Category C

System Name:	EEI Environmental Directory of US Power Plants		
Technologies Covered:	Energy		
Information Format:	numeric	Language *:	EN
		Dissemination **:	OL, DK, HC
Accessibility:	public	Size:	not known
Costs:	one-time purchase	Time Span:	1988 to date
Coverage:	national	Up-dates:	annually
System Owner:	Utility Data Institute (UDI)		
Branch:		Contact:	Utility Data Institute (UDI)
Address:	1200 G St NW Suite 250, Washington, DC 20005	Tel:	+1-202-942-8788
		Fax:	+1-202-942-8784
Location:	United States	E-mail:	info@udinata.com
Internet/WWW:			

System Description: IBM PC or compatible.

Information Contained: Environmental data on power plants.

Information Source: Not known.

Dissemination Method: On-line, diskette and hard copy.

Users, Accessibility, Cost: Initial purchase: $495; renewals: $250. Purchase includes current copy of print edition.

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*** OL=on-line, DK=diskette, CD=CD ROM, MT=magnetic tape, QR=query response, HC=hard copy*

Category C Systems

EIDS

Category C

System Name:	Environmental Information and Documentation System (UMPLIS)		
Technologies Covered:	Cleaner Production, Energy, Water, Air, Land and Agriculture, Noise and Vibration, Solid Waste, Hazardous Waste, Global Environment		
Information Format:	bibliographic, abstracts	Language *:	EN, GE
		Dissemination **:	OL, CD
Accessibility:	public	Size:	1,000,000+
Costs:	usage charge	Time Span:	1974
Coverage:	national	Up-dates:	continuously
System Owner:	Umweltbundesamt/Federal Environment Agency		
Branch:	Dept. of Information and Documentation	Contact:	Dr. Klaus Luedcke
Address:	Bismarckplatz 1, D-14193 Berlin-Grunewald	Tel:	+49-30-8903/2305/2213
		Fax:	+49-30-8903/2154
Location:	Germany	E-mail:	
Internet/WWW:			

System Description: Several connected databases, especially Umweltliteraturdaten bank (ULIDAT) and German Environmental Information Network (GEIN) in INTERNET and BIBLIO DAT, an library information system.

Information Contained: Pollution control for hazardous substances, air quality, waste disposal, marine environment, environmental law, research and development, water, noise, ecology and nature conservation. Data on 3000 hazardous substances, in house data bases on waste management (AWIDAT), air quality (LIMBA), water (HYDABA), marine (MUDAB), research (UFORDAT), literature (ULITDAT) and law (URDB). Statistics, dates, facts, graphics and presentations.

Information Source: Publications held at the library of the Umweltbundesamt.

Dissemination Method: On-line, several hosts in WWW.

Users, Accessibility, Cost: Restricted access to specific partners. Charges are negotiable.

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*** OL=on-line, DK=diskette, CD=CD ROM, MT=magnetic tape, QR=query response, HC=hard copy*

Category C Systems

Energy Conservation Database

Category C

System Name:	Energy Conservation Database		
Technologies Covered:	Energy		
Information Format:	full-text	Language *:	JP
		Dissemination **:	QR, HC
Accessibility:	restricted	Size:	2,000
Costs:	not known	Time Span:	not known
Coverage:	national	Up-dates:	not known
System Owner:	Energy Conservation Centre - Japan (ECCJ)		
Branch:		Contact:	Mr. Kazuo Usui General Manager
Address:	3-19-9 Hatchobori, Chuo-ku, Tokyo 104	Tel:	+81-3-5543-3017
		Fax:	+81-3-5543-3022
Location:	Japan	E-mail:	
Internet/WWW:			

System Description: The system is an in-house database.

Information Contained: Energy conservation technologies related to energy management, heat insulation, combustion, heating and cooling, heat recovery, heat storage, power generation, cogeneration, power distribution, lighting, motive power, air conditioning, transportation and recycling. Contains about 20,000 records on topics such as energy management, heat insulation, combustion, heating and cooling, heat recovery, heat storage, power generation, cogeneration, power distribution, lighting, motive power, air conditioning, transportation, and recycling.

Information Source: Various.

Dissemination Method: Query-response system and hard copy through its publication "Japan Energy Conservation Handbook".

Users, Accessibility, Cost: Not known.

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*** OL=on-line, DK=diskette, CD=CD ROM, MT=magnetic tape, QR=query response, HC=hard copy*

Category C Systems

Energy Technology and Natural Resources Directory

Category C

System Name:	94-95 Directory on Energy Efficiency and Natural Resources		
Technologies Covered:	Energy, Land and Agriculture		
Information Format:	directory, full text	Language *:	EN, FR
		Dissemination **:	DK, HC
Accessibility:	public	Size:	not known
Costs:	free of charge	Time Span:	not known
Coverage:	national	Up-dates:	not known
System Owner:	Natural Resources Canada		
Branch:	Energy Efficiency Programs Division	Contact:	Mr. Bill Jarvis Director General
Address:	580 Booth, Ottawa, Ontario K1A OE4	Tel:	+1-613-996-7512
		Fax:	+1-613-943-1590
Location:	Canada	E-mail:	
Internet/WWW:			

System Description: IBM personal computer or 100% IBM compatible - MSDos version 3.1 or later, 8088 or faster processor; MS dos; 640K RAM, 1.44, 3.5" floppy drive and mouse.

Information Contained: Renewable and conservation energy technologies: active solar energy, energy, bioenergy, ground source heat pumps, natural gas transportation fuel systems, photovoltaic energy, small hydro power, wind energy, wood burning appliances, building energy control systems, building space conditioning, energy-efficient building products, heat recovery and distribution, and industrial process equipment. The directory provides information on companies involved in energy related technologies. Each entry contains the company name, the type of company, address, contact numbers, contact names, employees, sales category, and a descriptions of products and services.

Information Source: Not known.

Dissemination Method: Diskette available from Natural Resources Canada.

Users, Accessibility, Cost: No limit to access. Free of charge.

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*** OL=on-line, DK=diskette, CD=CD ROM, MT=magnetic tape, QR=query response, HC=hard copy*

Category C Systems

Energy/Environment Disc

Category C

System Name:	Energy/Environment Disc		
Technologies Covered:	Air, Solid Waste, Energy		
Information Format:	bibliographic	Language *:	EN
		Dissemination **:	CD, HC
Accessibility:	public	Size:	700,000
Costs:	varies	Time Span:	1980 to date
Coverage:	national	Up-dates:	quarterly
System Owner:	Engineering Information, Inc. (Ei)		
Branch:		Contact:	DIALOG Information Services, Inc.
Address:	345 E. 47th St., New York, NY 10017	Tel:	+1-212-7 05-7600
		Fax:	+1-212-832-1857
Location:	United States	E-mail:	
Internet/WWW:	http://www.ei.org/		

System Description: IBM PC, PS/2 or compatible; 512K memory; HD; MS DOS 3.1 or higher; MS CD-ROM Extensions 2.0 or higher; CD-ROM drive

Information Contained: air pollution, fuels, alternative energy sources, geology, resource management, waste disposal and processing, nuclear technology and geophysics.Bibliographic, citations and abstracts.

Information Source: Derived from Ei Compendex Plus. 52,000 records added annually.

Dissemination Method: CD-ROM and printed version available from DIALOG Information Services Inc. See entry under Database Provides in Institutions section.

Users, Accessibility, Cost: Architectural engineers, occupational health specialists, industrial hygiene professionals as well as government officials. Subscription price: 5-year backfile=US$2500, 10-year backfile=US$4500.

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*** OL=on-line, DK=diskette, CD=CD ROM, MT=magnetic tape, QR=query response, HC=hard copy*

Category C Systems

EP3 INFO

Category C

System Name:	Environmental Pollution Prevention Project		
Technologies Covered:	Cleaner Production, Water, Air		
Information Format:	full-text	Language *:	EN
		Dissemination **:	OL, QR
Accessibility:	public	Size:	1,000
Costs:	not known	Time Span:	1993
Coverage:	international	Up-dates:	continuous
System Owner:	United States Agency for International Development (USAID) and RCG/Hagler Bailly, Inc		
Branch:	EP3 Headquarters	Contact:	Audrey Pendergast
Address:	1530 Wilson Blvd., Suite 900, Arlington, VA 22209-2406	Tel:	+1-703-351-4004
		Fax:	+1-703-351-6166
Location:	United States	E-mail:	apenderg@habaco.com
Internet/WWW:	http://wastenot.inel.gov:80/enviroene/internet/ep3/ep3100.html		

System Description: Query-response service, some information is computerized in the EP3INFO database. Database is updated regularly. Expansion of the system took place in 1995.

Information Contained: Industrial cleaner production (pollution prevention) technologies (from assessment reports in EP3 projects) in developing countries which includes electroplating, food processing, paper, plastics, printing, tanning and textiles. Tailored to the individual facility or project. EP3 diagnostic assessment reports on pollution in plants in developing countries.

Information Source: EP3 Projects in developing countries.

Dissemination Method: Information page on accessible by the Internet.

Users, Accessibility, Cost: Access to information where EP3 contacts do not exist can be sent to EP3 HQ. Users are persons in developing countries who need data on industrial and urban pollution prevention technologies. Access is through EP3 contacts in various countries. Although there are generally no costs involved, EP3 reserves the right to charge fees depending upon the source of request and the information sought. Costs not known.

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Category C Systems

ERTH

Category C

System Name:	Environmental Resources Technology		
Technologies Covered:	Cleaner Production, Land and Agriculture		
Information Format:	bibliographic, abstracts	Language *:	EN
		Dissemination **:	OL, HC
Accessibility:	public	Size:	36,000
Costs:	varies	Time Span:	1965-present
Coverage:	international	Up-dates:	monthly
System Owner:	Petroleum Abstracts		
Branch:		Contact:	ORBIT Search Service
Address:	600 S. College, Tulsa, OK 74104-3189	Tel:	+1-918-631-2296
		Fax:	+1-918-599-9361
Location:	United States	E-mail:	question@TUred.pa.utulsa.edu
Internet/WWW:	http://www.pa.utulsa.edu/		

System Description: Database.

Information Contained: Environmental issues (ecology, pollution, health and safety) related to petroleum exploration, production and transportation. Bibliographic.

Information Source: Worldwide petroleum-related literature and patents.

Dissemination Method: On-line via Orbit/Questel (see entry "Database Providers" in Institutions Section).

Users, Accessibility, Cost: Main users are individuals from the energy industry, academic and research institutions. Prices vary by vendor.

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Category C Systems

ETNA

Category C

System Name:	Environmental Technology Network for Asia		
Technologies Covered:	Energy, Water, Solid Waste, Air, Water		
Information Format:	full-text	Language *:	EN
		Dissemination **:	QR, HC
Accessibility:	restricted	Size:	not known
Costs:	free of charge	Time Span:	1992
Coverage:	regional	Up-dates:	continuous
System Owner:	United States-Asia Environmental Partnership (US-AEP)		
Branch:		Contact:	Mr. Ted Yoder
Address:	1133 20th Street NW, Suite 300, Washington, DC 20036	Tel:	+1-202-835-0333
		Fax:	+1-202-835-0366
Location:	United States	E-mail:	tyoder@usaid.gov
Internet/WWW:	http://www.info.usaid.gov/welcome/ctis/etna.html		

System Description: Database. Representatives in various countries gather leads for environmental technology business opportunities. These are matched to US companies in database. Matched companies are alerted by fax.

Information Contained: Covers air pollution controls, water liquid pollution, solid waste treatment, containment and disposal, groundwater treatment, environmental services, energy conservation, renewable energy, and waste minimization. Environmental technologies offered by US companies. (Environmental Enterprises Development Initiative (EEDI), Urban Environmental Infrastructure Programme (UE/P), Environmental/Energy Technology Fund).

Information Source: US-AEP Environmental action teams from US EPA. Grants to small and mid-size US firms to demonstrate technologies in Asia and links to financing organizations.

Dissemination Method: Query response and hard copy.

Users, Accessibility, Cost: Free through US-AEP offices in Bangkok, Bombay, Hong-Kong, Jakarta, Kuala Lumpur, Manila, Seoul, Singapore, and Taipei.

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Category C Systems

EUREKA

Category C

System Name:	Environmental Research Projects		
Technologies Covered:	Cleaner Production, Energy, Water, Air, Noise and Vibration, Land and Agriculture, Solid Waste, Hazardous Waste, Global Environment, Building and Engineering		
Information Format:	full-text	Language *:	EN
		Dissemination **:	OL, QR
Accessibility:	public	Size:	1,000
Costs:	free of charge	Time Span:	1995
Coverage:	regional	Up-dates:	weekly
System Owner:	EUREKA Secretariat		
Branch:	Database Department	Contact:	Mr. Juzu Zamorano
Address:	19H, Avenue des Arts, Boite 5, 1000-Brussels	Tel:	+32-2-229-2240
		Fax:	+32-2-218-7906
Location:	Belgium	E-mail:	zamorano@mail.interpac.be
Internet/WWW:	http://eureka.belspo.be		

System Description: Database.

Information Contained: This address offers access to EUREKA general information. The database contains information on EUREKA projects and EUREKA umbrellas with descriptions based on the original reports supplied by the participants. Included are project name, status, technological area, participants, contact persons, application market, and other relevant information.

Information Source: EUREKA project publications and control database.

Dissemination Method: Online via Internet.

Users, Accessibility, Cost: Set up to serve as a European-wide framework to encourage collaboration on advanced technology projects between firms, research institutes and government organizations. Free of charge.

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Category C Systems

Eurowin

Category C

System Name:	European Wind Turbine Database		
Technologies Covered:	Energy		
Information Format:	full-text, numeric	Language *:	EN
		Dissemination **:	HC
Accessibility:	public	Size:	not known
Costs:	free of charge	Time Span:	1991-1993
Coverage:	regional	Up-dates:	not known
System Owner:	International Energy Agency (IEA) and the Fraunhofer Society		
Branch:	Institute for Solar Energy Systems	Contact:	Mr. Marcus Rehm
Address:	Oltmannstrasse 5, Freiburg, D-79100	Tel:	+49-761-4588-219 (216)
		Fax:	+49-761-4588-217
Location:	Germany	E-mail:	mrehm@ise.fhg.de
Internet/WWW:	http://www.ise.fhg.de/		

System Description: The EUROWIN project was a network of wind energy experts. The system operator is the Fraunhofer Society, Institute of Solar Energy Systems and was sponsored by the European Commission (JOULE II program).

Information Contained: Renewable Energy Technologies (Europe). Wind energy conversion systems (wind turbine generators). Statistical summary of wind turbines installations and performance and report of wind energy activities in progress in 18 European countries.

Information Source: Annual Reports on Wind Energy - Published by the Executive Committee of IEA R&D Wind.

Dissemination Method: On-line via the internet

Users, Accessibility, Cost: Access is possible by computer to the whole database (1991-1993) or only part of it, depending on whether the user is an EUROWIN member or an Internet user, etc. Main users are researchers, government officials and private organizations interested in wind turbine technologies. Free of charge via the Internet.

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Category C Systems

GC

Category C

System Name:	Global Change		
Technologies Covered:	Global Environment		
Information Format:	bibliographic, directory	Language *:	EN
		Dissemination **:	DK, MT
Accessibility:	public	Size:	not known
Costs:	subscription	Time Span:	current
Coverage:	international	Up-dates:	bi-weekly
System Owner:	Institute for Scientific Information (ISI)		
Branch:		Contact:	Institute for Scientific Information (ISI)
Address:	3501 Market St., Philadelphia, PA 19104	Tel:	+1-215-386-0100
		Fax:	+1-215-386-2911
Location:	United States	E-mail:	
Internet/WWW:			

System Description: IBM PC or compatible: floppy drive; hard disk; MS DOS 2.1 or higher. Apple Macintosh Plus, SE or II: floppy drive; hard disk. NEC PC 9801 VM: floppy drive; hard disk.

Information Contained: Bibliographic; directory

Information Source: Not known.

Dissemination Method: Diskette; print version also by ISI.

Users, Accessibility, Cost: Annual subscription, $345; charter discounts available.

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*** OL=on-line, DK=diskette, CD=CD ROM, MT=magnetic tape, QR=query response, HC=hard copy*

Category C Systems

HCT

Category C

System Name:	Hydrocarbon Technology Information Service		
Technologies Covered:	Global Environment		
Information Format:	bibliographic, full-text	Language *:	GE, EN
		Dissemination **:	OL, QR
Accessibility:	public	Size:	not known
Costs:	free of charge	Time Span:	not known
Coverage:	international	Up-dates:	not known
System Owner:	Deutsche Gesellschaft für Technische Zusammenarbeit (GTZ) GmbH		
Branch:	German Appropriate Technology Exchange (GATE)	Contact:	Dr. Peter Baz
Address:	Postfach 5180, Dag-Hammarskjöld-Weg 1-5, D-6236 Eschborn	Tel:	+49-6196-79-3198
		Fax:	+49-6196-79-7352
Location:	Germany	E-mail:	gtz-gate-fckw@geod.geonet.de
Internet/WWW:			

System Description: Database.

Information Contained: Hydrocarborns used as replacements to CFCs. Text based material in form of technical reports and global directory and bibliography on hydrocarbon technologies.

Information Source: Reports on equipment and processes, factory conversion experiences by German refrigeration producers, publicly available know-how and practices on the use of hydrocarbon technology, frequently asked questions, and reports from phase-out projects in developing countries.

Dissemination Method: On-line via e-mail mailbox and World Wide Web from January 1995 in the Internet.

Users, Accessibility, Cost: Free and unrestricted access via Internet. Free of charge.

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Category C Systems

ICARUS

Category C

System Name:	Info Sys on Conserv. and Appl. of Resources Using a Sector Approach		
Technologies Covered:	Energy		
Information Format:	full-text	Language *:	EN
		Dissemination **:	DK, HC
Accessibility:	public	Size:	900
Costs:	one-time purchase	Time Span:	1994
Coverage:	national	Up-dates:	2-3 times/year
System Owner:	University of Utrecht		
Branch:	Department of Science, Technology and Society	Contact:	Dr. Jeroen G. de Beer
Address:	Padulaan 14, Utrecht, NL-3584 CH	Tel:	+31-30-537638/7600
		Fax:	+31-30-537601
Location:	Netherlands	E-mail:	J.deBeer@nwsmail.chem.ruu.nl
Internet/WWW:	http://www.chem.ruu.nl/nws/www/nws.html		

System Description: Database contained in Quattro-Pro spreadsheet.

Information Contained: Information on saving potential and cost for about 900 energy efficient technologies that can be applied in all economic sectors in Netherlands for the periods 1990-2008 and 1990-2015; energy growth and price scenarios; CO2 emission factors per fuel; energy balance for 1990; etc.

Information Source: Research undertaken at the University of Utrecht.

Dissemination Method: Diskette.

Users, Accessibility, Cost: Users are research institutes, government, policy makers, utilities companies. Free of charge.

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Category C Systems

ICRAF MTSD

Category C

System Name:	ICRAF Multi-Purpose Tree and Shrub Database		
Technologies Covered:	Land and Agriculture, Global Environment, Building and Engineering		
Information Format:	full-text, bibliographic	Language *:	EN
		Dissemination **:	DK
Accessibility:	public	Size:	not known
Costs:	one-time purchase	Time Span:	not known
Coverage:	international	Up-dates:	not known
System Owner:	International Centre for Research in Agro-Forestry (ICRAF)		
Branch:		Contact:	Mr. Roland Kinst, Associate Scientist, Ethnobotany
Address:	P.O. Box 30677, Nairobi	Tel:	+254-2-521450
		Fax:	+254-2-521001
Location:	Kenya	E-mail:	icraf@cgnet.com
Internet/WWW:			

System Description: Database.

Information Contained: Agroforestry technologies. Descriptions of agro-forestry species and their ecological requirements, cultivation problems, uses and services and geographic distribution.

Information Source: Research undertaken at ICRAF, "Agro-forestry Today" and other ICRAF publications.

Dissemination Method: Diskettes.

Users, Accessibility, Cost: Main users are research organizations and NGOs. Available in diskette for US$120.

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*** OL=on-line, DK=diskette, CD=CD ROM, MT=magnetic tape, QR=query response, HC=hard copy*

Category C Systems

IETD

Category C

System Name:	Innovative Environmental Technology Database		
Technologies Covered:	Cleaner Production, Solid Waste, Global Environment		
Information Format:	bibliographic, full-text	Language *:	EN
		Dissemination **:	CD
Accessibility:	public	Size:	not known
Costs:	one-time purchase	Time Span:	not known
Coverage:	international	Up-dates:	annually
System Owner:	Solutions Software Corporation		
Branch:		Contact:	Mr. Richard Dunkel
Address:	1795 Turtle Hill Road, Enterprises, Florida 32725	Tel:	+1-407-321-7912
		Fax:	+1-407-321-3098
Location:	United States	E-mail:	solutions@env-sol.com
Internet/WWW:	http://www.env-sol.com		

System Description: Database.

Information Contained: Covers water, wastewater, air, remediation, waste reduction and recycling. "How to" datafile of waste management solutions. Each solution is presented in detail along with implementation plan. Also includes comprehensive collection of treatability studies covering treatment technologies and post-treatment analysis.

Information Source: United States government and federal state data in the public domain.

Dissemination Method: CD-ROM available from Solutions Software.

Users, Accessibility, Cost: Users not known. Costs available from Solutions Software.

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*** OL=on-line, DK=diskette, CD=CD ROM, MT=magnetic tape, QR=query response, HC=hard copy*

Category C Systems

LINK

Category C

System Name:	The LINK System		
Technologies Covered:	Water, Air		
Information Format:	full-text	Language *:	EN
		Dissemination **:	OL, QR
Accessibility:	not known	Size:	not known
Costs:	not known	Time Span:	1994
Coverage:	international	Up-dates:	not known
System Owner:	Applied Environmental Technologies (AET)		
Branch:		Contact:	Ms. H. Halvarsson Chairperson
Address:	1215 Fourth Avenue, St. 320, Seattle, WA 98161	Tel:	+1-206-622-5589/206-323-1820
		Fax:	+1-206-622-6343/206-329-3364
Location:	United States	E-mail:	LINK@halcyon.com
Internet/WWW:			

System Description: System includes a business to business matching component, a query system, international and domestic business specialists and a notification system. Subscriber companies profiles on a diskette are matched with potential buyers. Subscribers and potential buyers are notified by fax or E-Mail. An interactive info.cpmm smart system specifically adapted to match domestic and international buyers with US suppliers of environmental services and products.

Information Contained: Technologies, products and services for subscribers from all segments of the environmental pollution control industry. Detailed experience profiles and contact information for US environmental companies that subscribe to the service.

Information Source: Available technology is limited to sources from the N.W. of US but will eventually spread to include sources from all parts of the US.

Dissemination Method: On-line system currently not operational. However, call-in or mailing queries can be processed.

Users, Accessibility, Cost: Available through environmental industry associations by subscription. Initially to be set up for US Pacific Northwest companies. System design and pilot in 1994. Adaptation underway with US federal funding. Costs not known.

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Category C Systems

NATTA

Category C

System Name:	Network for Alternative Technology and Technology Assessment		
Technologies Covered:	Energy		
Information Format:	numeric, full-text	Language *:	EN
		Dissemination **:	OL, HC
Accessibility:	public	Size:	not applicable
Costs:	subscription	Time Span:	1976
Coverage:	national	Up-dates:	bi-monthly
System Owner:	Network for Alternative Technology and Technology Assessment (NATTA)		
Branch:	Energy and Environmental Research Unit (EERU)	Contact:	Dr. D. A. Elliott
Address:	c/o Walton Hall, Open University, Milton Keynes, Bucks, MK7 6AA	Tel:	+44-1908-65-4638
		Fax:	+44-1908-65-3744
Location:	United Kingdom	E-mail:	d.a.elliott@open.ac.uk
Internet/WWW:	http://eeru-www.open.ac.uk/		

System Description: World Wide Web site.

Information Contained: Renewable energy: wind farms, water power, solar and biofuels. Policies and technology development in the field of renewable energy with emphasis on the UK.

Information Source: Extracts from RENEW, NATTA's journal on renewable energy technology.

Dissemination Method: Available online via the internet and in hard copy through its bi-monthly publication, the RENEW journal.

Users, Accessibility, Cost: Main users are academic and research institutions and other organizations interested in renewable energy technologies. Free of charge for online users and £2.50 for one issue of RENEW and free for NATTA members. Annual membership fees are £10 and £15 for individuals and £50 for universities, libraries and institutions.

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Category C Systems

REFIS

Category C

System Name:	Russian Ecological Federal Information System		
Technologies Covered:	Water, Solid Waste		
Information Format:	full-text, directory	Language *:	RU
		Dissemination **:	QR
Accessibility:	not known	Size:	300
Costs:	not known	Time Span:	not known
Coverage:	national	Up-dates:	not known
System Owner:	Russian Ecological Federal Information Agency (REFIA)		
Branch:		Contact:	Prof. N G Rybalsky General Director
Address:	B. Gruzinskaya, 4/6, Moscow 123812	Tel:	+70-95-284-8235
		Fax:	+70-95-284-8550
Location:	Russia	E-mail:	
Internet/WWW:			

System Description: Query-response system.

Information Contained: Pollution control, industrial and municipal wastes, agriculture, water purification and biotechnology. Survey of organizations/institutes in Russian Federation developing environmentally sound technologies.

Information Source: General description of Russian technologies, directory of contact organizations, documentation, information from 300 organizations.

Dissemination Method: Query response system.

Users, Accessibility, Cost: Access to be negotiated with the system manager. Costs not known.

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*** OL=on-line, DK=diskette, CD=CD ROM, MT=magnetic tape, QR=query response, HC=hard copy*

Category C Systems

REPIDISCA

Category C

System Name:	REPIDISCA Bibliographic Database		
Technologies Covered:	Water, Air, Solid Waste		
Information Format:	bibliographic	Language *:	EN, SP
		Dissemination **:	MT, HC, CD
Accessibility:	public	Size:	85,000
Costs:	one-time purchase	Time Span:	1982 to date
Coverage:	regional	Up-dates:	annually
System Owner:	Pan-American Centre for Sanitary Engineering & Environmental Sciences (CEPIS)		
Branch:	Pan-American Info. & Documentation Network on Sanitary Eng. and Env. Sci. (REPIDISCA)	Contact:	Ms. Marta Bryce
Address:	Los Pinos 259, Camacho, Casilla 4337, Lima 100	Tel:	+51-14-371077
		Fax:	+51-14-378289
Location:	Peru	E-mail:	cepis@cepis.pe
Internet/WWW:			

System Description: Database with bibliographic search service wherein users receive a list of relevant documents in reply to request for information on their chosen subject.

Information Contained: Abstracts, summaries and bibliographic citations covering environmental health, environmental and sanitary engineering, water resources and pollution, municipal and hazardous waste, soil and air pollution, occupational health and industrial safety.

Information Source: Information generated in Latin America and the Caribbean countries. Sources include conference proceedings, technical data from producers and feedback reports from users.

Dissemination Method: A CD-ROM version produced by the Latin American and Caribbean Health Sciences Information Centre (BIREME) is issued every four months. A user-friendly package using CDS/ISIS to computerize bibliographic information has also been developed. REPIDISCA also publishes a quarterly in both English and Spanish called REPINDEX.

Users, Accessibility, Cost: One-time purchase only at cost of $50.

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*** OL=on-line, DK=diskette, CD=CD ROM, MT=magnetic tape, QR=query response, HC=hard copy*

Category C Systems

RET

Category C

System Name:	Renewable Energy Technologies		
Technologies Covered:	Energy		
Information Format:	full-text	Language *:	EN
		Dissemination **:	HC
Accessibility:	restricted	Size:	not known
Costs:	not known	Time Span:	1983
Coverage:	national	Up-dates:	not known
System Owner:	Energy Commission of Nigeria		
Branch:	Sokoto Energy Research Centre	Contact:	Dr. A T Atiku
Address:	Usmanu Danfodiyo University, P.M.B. 2346, Sokoto	Tel:	+234-60-237568
		Fax:	+234-60-237568
Location:	Nigeria	E-mail:	
Internet/WWW:			

System Description: Database.

Information Contained: Renewable energy technologies, alternative sources of energy, and energy conservation. Development, installation and application information on biogas and solar energy technologies.

Information Source: Not known.

Dissemination Method: Printed information on all systems may be obtained via the centre.

Users, Accessibility, Cost: Main users are academic and research institutions, government and the industrial sector. Costs not known.

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*** OL=on-line, DK=diskette, CD=CD ROM, MT=magnetic tape, QR=query response, HC=hard copy*

Category C Systems

SAGE

Category C

System Name:	Solvent Alternatives Guide		
Technologies Covered:	Global Environment		
Information Format:	software	Language *:	EN
		Dissemination **:	OL
Accessibility:	public	Size:	not applicable
Costs:	free of charge	Time Span:	not known
Coverage:	national	Up-dates:	continuous
System Owner:	United States Environmental Protection Agency (USEPA)		
Branch:	Air Pollution Prevention and Control Division	Contact:	Mr. Charles H. Darvin Project Officer
Address:	EPA, Research Triangle park, NC 27711	Tel:	+1-919-541-7633
		Fax:	+1-919-541-7891
Location:	United States	E-mail:	sage-master@clean.rti.org
Internet/WWW:	http://clean.rti.org		

System Description: This system is under the sponsorship of EPA but system programming and implementation is being done by the Research Triangle Institute. The concept was developed jointly by EPA and RIT. SAGE is PC based logic tree which evaluates the user's present operating scenario and identifies possible solutions. Minimum hardware requirements: 286 PC, DOS 3.3, printer. A new windows and version is in development.

Information Contained: ODS solvents and volatile organic compounds (VOCs). Details on economically and technically feasible non-ODS/VOC alternatives. Provides case studies.

Information Source: Not known.

Dissemination Method: On-line accessible via modem at 1200 and 2400 baud, 8 data bits, no parity, 1 stop bit. Tel 1-919-541-1447. Or 9600 baud at 8 bits, no parity, 1 stop bit on Tel 1-919-541-1447. The web site is at RIT. SAGE can also be obtained from EPA Internet access, TELNET ttnbbs.rtpnc.epa.gov

Users, Accessibility, Cost: Designed for technical and non-technical personnel. Free of charge.

** EN=English, FR=French, GE=German, SP=Spanish, JP=Japanese, CH=Chinese, RU=Russian, DA=Danish, SWE=Swedish, AR=Arabic, OT=Other Language/s*

*** OL=on-line, DK=diskette, CD=CD ROM, MT=magnetic tape, QR=query response, HC=hard copy*

Category C Systems

TROPAG & RURAL

Category C

System Name:	Tropag & Rural		
Technologies Covered:	Land and Agriculture		
Information Format:	abstracts	Language *:	EN
		Dissemination **:	OL, CD, HC
Accessibility:	public	Size:	117,000+
Costs:	usage charge	Time Span:	1975 to date
Coverage:	international	Up-dates:	quarterly
System Owner:	Royal Tropical Institute		
Branch:	Information, Library & Documentation	Contact:	Dr. J.H.W. Jan Hartevelt
Address:	Mauritskade 63, NL 1092 AD, Amsterdam	Tel:	+31-20-5688298
		Fax:	+31-20-6654423
Location:	Netherlands	E-mail:	ibd@support.nl
Internet/WWW:			

System Description: The minimum hardware requirements for the CD-ROM version are an IBM PC or compatible or a Macintosh Plus, SE or II series, hard disk, CD-ROM drive, and 1MB memory. The software used was PC SPIRS (for IBM) or MacSPIRS (for Apple) from SilverPlatter Information, Inc.

Information Contained: Tropical and sub-tropical agriculture including crop production, crop protection, fertilizers and soils, plant nutrition, agricultural techniques, crop processing and storage, animal husbandry, aquaculture, forestry, agro-forestry, farming systems research and agricultural development, and environmentally sound agricultural practices. Bibliographic.

Information Source: Covers worldwide journal articles, monograohs, theses, conference papers and proceedings and miscellaneous documents. TROPAG is produced as part of the European Consortium for agricultural research in the tropics (EGART).

Dissemination Method: On-line via Orbit/Questel and ESA-IRS, CD-ROM by SilverPlatter Information, Inc., and print version by Royal Tropical Institute.

Users, Accessibility, Cost: Agricultural specialists, researchers and government. Charges vary by vendor.

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*** OL=on-line, DK=diskette, CD=CD ROM, MT=magnetic tape, QR=query response, HC=hard copy*

Category C Systems

WATERLIT

Category C

System Name:	Water Literature Database		
Technologies Covered:	Water, Solid waste		
Information Format:	bibliographic	Language *:	EN
		Dissemination **:	OL, CD
Accessibility:	public	Size:	250,000
Costs:	varies	Time Span:	1976 to date
Coverage:	international	Up-dates:	quarterly
System Owner:	South African Water Information Centre (SAWIC)		
Branch:		Contact:	South African Water Information Centre
Address:	P.O. Box 395, Pretoria 001	Tel:	+27-12-841-3362
		Fax:	+27-12-349-1154
Location:	Republic of South Africa	E-mail:	sawic@cis.co.za
Internet/WWW:	http://africa.cis.co.za:81/env/sawic/main.html		

System Description: Database.

Information Contained: Subject coverage includes water supply, water treatment, water pollution control, water quality, hydrology, irrigation, groundwater, wastewater treatment, industrial wastes, waste management, environmental issues, sanitation, development issues, legislation. Includes references selected from journals, books, conference proceedings, reports, pamphlets and theses. The database contains published information on water-related topics, contains references to both local and international literature with over 250 000 references and a strong Southern African component.

Information Source: Over 500 journals worldwide are scanned for information. Contributinglibraries include Department of Water Affairs and Forestry and the South Africa Water Research Commission.

Dissemination Method: WATERLIT is available online directly via Worldnet Gateway. CD-ROMs produced by SilverPlatter International with title "Waterlit".

Users, Accessibility, Cost: Vendors determine charges/prices.

** EN=English, FR=French, GE=German, SP=Spanish, JP=Japanese, CH=Chinese, RU=Russian, DA=Danish, SWE=Swedish, AR=Arabic, OT=Other Language/s*

*** OL=on-line, DK=diskette, CD=CD ROM, MT=magnetic tape, QR=query response, HC=hard copy*

	Institution Name	Location
UN International Agencies		
FAO	Food and Agriculture Organization	Italy
INFOTERRA	UNEP INFOTERRA	Kenya
UN HOMEPAGE	United Nations	United States
UNCHS - Habitat	United Nations Centre for Human Settlements	Kenya
UNCRD	United Nations Centre for Regional Development	Japan
UNCTAD	United Nations Conference on Trade and Development	Switzerland
UNDP	United Nations Development Programme	United States
UNECE	United Nations Economic Commission for Europe	Switzerland
UNEP (HQ)	United Nations Environment Programme	Kenya
UNEP - IE	UNEP Industry and Environment	France
UNEP - IETC	United Nations Environment Programme, International Environmental Technology Centre	Japan
UNEP - ROE HOMEPAGE	UNEP - Regional Office for Europe Homepage	Switzerland
UNESCWA	United Nations Economic and Social Commission for Western Asia	Jordan
UNIDO	United Nations Industrial Development Organization	Austria
WB	The World Bank	United States
WHO	World Health Organization	Switzerland
WMO	World Meteorological Organisation	Switzerland
Inter-Governmental Agencies		
ADB	Asian Development Bank	Philippines
EBRD	European Bank for Reconstruction and Development	United Kingdom
EEA	European Environment Agency	Denmark
ETDE	IEA Energy Technology Data Exchange	United States
GREENTIE	IEA/OECD Greenhouse Gas Technology Information Exchange	Netherlands
ICGTI	IEA International Centre for Gas Technology Information	Denmark, USA
ICLEI	International Council for Local Environmental Initiatives	Canada
IEA	International Energy Agency	France
IEA - SHCP	International Energy Agency, Solar Heating and Cooling Programme	United States
IEA CADDET Energy Efficiency	IEA CADDET Energy Efficiency	Netherlands
IEA CADDET Renewables	IEA CADDET Renewables	United Kingdom
IEA-HPC	IEA Heat and Pump Centre	Netherlands
OECD	Organization for Economic Cooperation and Development	France
SolarPACES	IEA Solar Power and Chemical Energy Systems Program	Germany
TIPS	Technical Information Promotion System	Uruguay

	Institution Name	Location
Export Oriented Government Bodies		
CIDA	Canadian International Development Agency	Canada
FINNIDA	Finnish International Development Agency	Finland
GTZ/ISAT	GTZ/Information and Advisory Service on Appropriate Technology (ISAT)	Germany
IDRC	International Development Research Centre	Canada
JICA	Japan International Cooperation Agency	Japan
NORAD	Norwegian Agency for Development Cooperation	Norway
ODA	United Kingdom Overseas Development Administration	United Kingdom
SIDA	Swedish International Development Authority	Sweden
USAEP	United States-Asia Environmental Partnership	United States
USAID	United States Agency for International Development	United States
Export Oriented Non-Governmental Bodies		
AET	Applied Environmental Technologies	United States
EEC	Environmental Export Centre	Israel
GNET	Global Network for Environmental Technology	United States
IEBTI	International Environmental Business & Technology Institute	United States
JSIM	Japan Society of Industrial Machinery Manufacturers	Japan
KITI	Kishimoto International Technology Institute	Japan
VSM	Swiss Association of Machinery Manufacturers	Switzerland
Environmental Technology Centres and Research Institutes		
AIT	Asian Institute of Technology	Thailand
APCTT	Asian and Pacific Centre for Technology Transfer	India
ARCT	African Regional Centre for Technology	Senegal
AREC	Appropriate Renewable Energy Centre	Eritrea
CAEPI	Chinese Association for Environmental Protection Industry	China
CAEPS	Center for Alternative Energy and Propulsion Systems	United States
CAT	Centre for Alternative Technology	United Kingdom
CCT	Center for Clean Technology	United States
CEDARE	Centre for Environment and Development for the Arab Region and Europe	Egypt
CenCITT	National Center for Clean Industrial and Treatment Technologies	United States
CEPIS	Pan American Center for Sanitary Engineering and Environmental Sciences	Peru
CERES-GKN	CERES - Global Knowledge Network to Enable Environmentally Sound Product & Process Development	United States

EST INSTITUTIONS

	Institution Name	Location
CETC	California Environmental Technology Center	United States
CIPMA	Environmental Research and Planning Center	Chile
CJC	Clean Japan Centre	Japan
CREST	Center for Renewable Energy and Sustainable Technology	United States
CWRT	Center for Waste Reduction Technologies	United States
DA	Development Alternatives	India
DCED	Danish Centre for Environment and Development	Denmark
DPSTS	Department of Science, Technology and Society, University of Utrecht	Netherlands
ECCJ	Energy Conservation Center, Japan	Japan
EIC	Environmental Information Centre - Czech Republic	Czech Republic
EMS	Environmental Management Secretariat	Uruguay
ERTC	Environmental Research and Training Centre	Thailand
ETC	Environmental Technology Centre, Institute of Environmental Sciences	Australia
GEC	Global Environment Centre Foundation	Japan
GREC	Gambia Renewable Energy Centre	Gambia
ICETT	International Center for Environmental Technology Transfer	Japan
IEAC	Industry Environmental Assessment Center	China
IEP	Institute of Environmental Protection	Poland
ILEC	International Lake Environment Committee Foundation	Japan
IPTRID	International Programme for Technology Research in Irrigation and Drainage	United Kingdom
IRC	International Water and Sanitation Centre	Netherlands
ITMIN	Industrial Technology Market Information Network	Sri Lanka
JSPL	Jyvaskyla Science Park Limited	Finland
KfK/AFAS	Karlsruhe Research Centre	Germany
KINITI	Korea Institute of Industry and Technology Information	Korea
LIPI	Indonesian Institute of Sciences	Indonesia
MECTAT	Middle East Centre for the Transfer of Appropriate Technology	Lebanon
MEWIN	Middle East Water Information Network	United States
NACESTID	National Centre for Scientific and Technological Information	Vietnam
NATTA	Network of Alternative Technology & Technology Assessment	United Kingdom
NEERI	National Environmental Engineering Research Institute of India	India
NETCEN	National Environmental Technology Centre	United Kingdom
NIES	National Institute for Environmental Studies	Japan
NREL	National Renewable Energy Laboratory	United States
NTTC	National Technology Transfer Center	United States

	Institution Name	Location
NWRI	National Water Research Institute	Canada
OCETA	Ontario Centre for Environmental Technology Advancement	Canada
PASTIC	Pakistan Science and Technology Information Centre	Pakistan
REFIA	Russian Ecological Federal Information Agency	Russia
RIET	Regional Institute of Environmental Technology	Singapore
RITE	Research Institute for Innovative Technology	Japan
RRETC	River Road Environmental Technology Centre	Canada
SAWIC	South African Water Information Centre	Republic of South Africa
SEI	Stockholm Environment Institute	Sweden
SERC	Sokoto Energy Research Centre	Nigeria
TERI	Tata Energy Research Institute	India
Waterweb	Waterweb (tm)	United States
WEDC	Water, Engineering and Development Centre	United Kingdom
WRPC	Water Re-use Promotion Centre	Japan
WTC	Wastewater Technology Centre	Canada
Database Servers		
BCRI	British Columbia Research Institute	Canada
CEDAR	Central European Environmental Data Request Facility	Austria
CONICYT	National Commission for Scientific and Technological Research	Chile
CSA	Cambridge Scientific Abstracts	United States
ECHO	European Commission Host Organization	Luxembourg
ESA-IRS	European Space Agency - European Space Research Institute	Italy
JICST	Japan Information Centre for Science and Technology	Japan
KRI	Knight-Ridder Information Inc. (Dialog and Datastar)	United Kingdom
NTIS	United States National Technical Information Service	United States
Questel/Orbit	Questel/Orbit Inc.	France
STN	Scientific & Technical Information Network International	Germany
Database Producers		
CABI	CAB International	United Kingdom
EI	Engineering Information Inc.	United States
INIST	Institut de l'Information Scientifique et Technique	France
SI	SilverPlatter Information Inc.	United States
SSC	Solutions Software Corporation	United States

UN International Agencies

FAO

Category: INTER-A

Institution:	Food and Agriculture Organization
Description:	The United Nations Food and Agriculture Organisation (FAO) based in Italy is finalizing the creation of a computerized World Agricultural Information Centre (WAICENT). When fully operational the centre will provide users (including governments, research institutions, universities and the private sector) with fast and economical access to FAO s library of information on agriculture, fisheries, forestry, nutrition and rural development. WAICENT will consolidate around 40 existing agricultural databases housed through FAO and includes such features as cross-platform portability, royalty free distribution and the possibility of extending the system to include new databases.
Contact:	Library and Documentation Systems Division
Address:	Via delle Terme di Caracalla, Rome, I-00100
Tel:	+39-6-52-25-4391
Country:	Italy
Fax:	+39-6-52-25-3190
E-mail:	
Internet:	http://www.fao.org/

INFOTERRA

Category: INTER-A

Institution:	UNEP INFOTERRA
Description:	INFOTERRA, the Global Environmental Information Exchange Network of UNEP, was established in 1975 by a decision of the third Governing Council with the aim to develop a mechanism to "facilitate the exchange of environmental information within and among nations." INFOTERRA subsequently established a decentralized information system operating through a worldwide network of national environmental institutions designated and supported by their governments as focal point. In 1996, INFOTERRA became part of the Division of Environmental Information and Assessment.
Contact:	Mr. Taka Hiraishi, Asst. Executive Director, Division of Environmental Information and Assessment
Address:	PO Box 30552, Nairobi
Tel:	+254-2-62-3511
Country:	Kenya
Fax:	+254-2-62-3943
E-mail:	infotinf@unep.org
Internet:	http://www.unep.org

UN International Agencies

UN HOMEPAGE

Category: INTER-A

Institution: United Nations

Description: Established on 24 October 1945, the United Nations' seeks to maintain global peace and security, develop friendly relations among nations, cooperate internationally in solving international economic, social, cultural and humanitarian problems, and promote respect for human rights and fundamental freedom, undertake interdisciplinary research and analysis, among others. The UN consists of the General Assembly, the Security Council, the Economic and Social Council (under which are the Regional Economic Commissions), the Trusteeship Council, the International Court of Justice and the Secretariat. Information on the UN activities are introduced via a WWW server based at headquarters in New York. This includes details of news, conferences and publications.

Contact:

Address: 1 United Nations Plaza, New York, NY 10017 Tel: +1-212-963-1234

Country: United States Fax: +1-212-154-4416

E-mail:

Internet: http://www.un.org

UNCHS - Habitat

Category: INTER-A

Institution: United Nations Centre for Human Settlements

Description: UNCHS-Habitat is collaborating closely with IETC through the Sustainable Cities Programme (SCP). As a global programme, the SCP encourages and assists the exchange of knowledge and expertise among cities worldwide. The SCP is a joint UNCHS/UNEP facility, combining and applying the technical expertise and on-the-ground experience of both agencies in a bottom-up, demand driven programme which builds capacities at the local level, and has a proven record of sustainable urban development.

Contact: Dr. Jochen Eigen, Coordinator, Sustainable Cities Programme, Technical Cooperation Division

Address: PO Box 30030, Nairobi Tel: +254-2-623-225

Country: Kenya Fax: +254-2-624-264

E-mail: jochen.eigen@unep.org or eleanor.cody@unep.org

Internet:

UN International Agencies

UNCRD

Category: INTER-A

Institution: United Nations Centre for Regional Development

Description: Established in 1971, UNCRD seeks to assist developing countries in strengthening their capabilities for regional development and management. Towards this aim, UNCRD organizes training courses, promotes collaborative research on substantive issues in regional development, extends technical advisory services, serves as a forum for the exchange of experiences, and fosters exchange of publications and information on local/regional planning and development.

Contact: Dr. Hideki Kaji, Director (atten. Dr. Antonio Fernandez, Research Associate)

Address: 1-47-1 Nagono, Nakamura-ku, Nagoya 450 Tel: +81-52-561-9377

Country: Japan Fax: +81-52-561-9374

E-mail: kyb0264@niftyserve.or.jp

Internet:

UNCTAD

Category: INTER-A

Institution: United Nations Conference on Trade and Development

Description: UNCTAD operates an information system called GREENTRADE which includes details of environmental regulations with a possible trade impact. In total the system contains over 500 records covering all major OECD countries.

Contact: Mr. Roland Mollerus

Address: Palais des Nations, CH-1211 Geneva Tel: +41-22-917-6286

Country: Switzerland Fax: +41-22-917-0044

E-mail: roland.mollerus@unctad.org

Internet: http://www.unicc.org/unctad

UN International Agencies

UNDP

Category: INTER-A

Institutions: United Nations Development Programme

Description: The United Nations Development Programme (UNDP) is the world's largest multilateral source of grant funding for development cooperation. It was created in 1965 through a merger of two predecessor programmes for United Nations technical cooperation. The UNDP operates a WWW server providing details of all its activities including the Sustainable Development Network. UNDP was given the lead responsibility at the Earth Summit for capacity building to help developing countries formulate economic, social and environmental goals, plans, programmes and policies that lead to sustainable development. In 1989, UNDP initiated the Sustainable Development Network (SDN) project as a tool to help developing countries move toward sustainable development.

Contact:

Address: One United Nations Plaza, New York, NY 10017 Tel: +1-212-906-5000

Country: United States Fax: +1-212-906-5001

E-mail: jdsouza@undp.org

Internet: http://www.undp.org

UNECE

Category: INTER-A

Institutions: United Nations Economic Commission for Europe

Description: UNECE has undertaken a number of important studies related to EST including the 1994 report on low-waste technologies in engineering industries and an inventory of safety guidelines in biotechnology.

Contact: Mr. Peter Caslavsky, Industry and Technology Division

Address: Palais Des Nations, CH-1211, Geneva 10 Tel: +41-22-917-3258

Country: Switzerland Fax: +41-22-917-0178

E-mail:

Internet:

UN International Agencies

UNEP (HQ)

Category: INTER-A

Institution: United Nations Environment Programme

Description: Established as a result of the United Nations Conference on the Human Environment convened in Stockholm in 1972, UNEP is dedicated to providing leadership and encouraging partnership in caring for the environment by inspiring, informing and enabling nations and peoples to improve their quality of life without compromising that of future generations. UNEP works with and through intergovernmental and non-governmental organizations and with the scientific community, through research centres and institutions in many countries. It's activities cover a wide range of issues including atmosphere and climate change, protection of the ozone layer, conservation of biological diversity, management of freshwater resources, protection of oceans and coastal areas, combating deforestation and desertification.

Contact: UNEP Information and Public Affairs

Address: PO Box 30552, Nairobi — Tel: +254-2-624099

Country: Kenya — Fax: +254-2-623415

E-mail: unepinfo@unep.org

Internet: http://www.unep.org

UNEP - IE

Category: INTER-A

Institution: UNEP Industry and Environment

Description: UNEP IE/PAC was established in Paris in 1975 to bring industry, government and NGOs together to work towards environmentally sound forms of development. The activities of IE/PAC cover a number of key areas including:

- cleaner production including ICPIC;
- environmental technology assessment;
- APELL (Awareness and Preparedness for Emergencies at Local Level) and
- OzonAction Programme.

Contact: Ms. Jacqueline Aloisi De Larderel, Director

Address: Tour Mirabeau, 39-43 Quai Andre Citroen, 75739 Paris Cedex 15 — Tel: +33-1-44-37-14-41

Country: France — Fax: +33-1-44-37-14-74

E-mail: unepie@unep.fr

Internet: http://www.unepie.org

UN International Agencies

UNEP - IETC

Category: INTER-A

Institutions: UNEP International Environmental Technology Centre

Description: In May 1991, UNEP's Governing Council took a decision to further strengthen UNEP's role in the management of cities and freshwater resources by calling for the creation of an International Environmental Technology Centre (IETC). The Centre was inaugurated in October 1992 in Japan and its offices in Osaka and Shiga officially opened in April 1994. IETC's main role is to act as a catalyst in facilitating the transfer of environmentally sound technologies to developing countries and countries with economies in transition. The Centre serves as a proactive inter-mediator for cooperation between sources and users of environmentally sound technologies.

Contact:	Mr. John Whitelaw, Director	
Address:	Osaka Office, 2-110 Ryokuchi Koen, Tsurumi-ku, Osaka 538	Tel: +81-6-915-4580
Country:	Japan	Fax: +81-6-915-0304
E-mail:	ietc@unep.or.jp	
Internet:	http://www.unep.or.jp	

UNEP - ROE HOMEPAGE

Category: INTER-A

Institutions: UNEP - Regional Office for Europe Homepage

Description: Geneva is a leading center for international treaties and major programmes dealing with the environment and sustainable development. Most of these activities are sponsored by the United Nations Environment Programme or by the United Nations Department for Policy Coordination and Sustainable Development (DPCSD). These include: Basel Convention on Transboundary Movements of Hazardous Wastes; Convention on Climate Change; Convention to Combat Desertification; Convention on International Trade in Endangered Species (CITES); Convention on Migratory Species (The Bonn Convention); Global Resource Information Database (GRID); Intergovernmental Panel on Climate Change (IPCC); and International Register of Potentially Toxic Chemicals (IRPTC).

Contact:	UNEP/IUCC	
Address:	C.P. 356 Geneva Executive Center, 1219 Chartelaine, Geneva	Tel: +41-22-979-9111
Country:	Switzerland	Fax: +41-22-797-3464
E-mail:	Mwilliams@unep.ch	
Internet:	http://www.unep.ch	

UN International Agencies

UNESCWA

Category: INTER-A

Institution:	United Nations Economic and Social Commission for Western Asia
Description:	The Sectoral Issues and Policies Division (Industry and Technology Sections) of UNESCWA is in the process of conducting and planning studies on EST. The Commission has undertaken a study on Cleaner Production Technologies with a special emphasis to Oil and Gas Related Industries. In addition a study on Strategies for the Replacement of ODS was completed in 1992. Other technologies will be examined in the future including food, agro-industries, tanneries, textiles, metal finishing, cement and fertilizers. Plans exist to network a large number of institutions, both within and outside the region, to begin the preparation of an EST related information system dealing with industry specific technologies.
Contact:	Mr. Z. Fattah, Officer in Charge, Sectoral Issues and Policies Division
Address:	PO Box 927115, Amman
Tel:	+962-6-694-351
Country:	Jordan
Fax:	+962-6-694-981
E-mail:	
Internet:	

UNIDO

Category: INTER-A

Institution:	United Nations Industrial Development Organization
Description:	UNIDO is the UN agency responsible for promoting the industrial development of developing countries. The organization operates a number of computerized information systems, networks, services and products under the umbrella of the Industrial and Technological Information Bank (INTIB). One such system deals with energy and environmental information, concentrating on cleaner production in industry. It seeks to provide a sustainable, cost-effective mechanisms for industrial environment information targeted to SMEs in developing countries.
Contact:	Mr. Peter Pembleton, Energy and Environment Information
Address:	Vienna International Centre, PO Box 300, A-1400 Vienna
Tel:	+43-1-211-31/3705
Country:	Austria
Fax:	+43-1-211-31/6843
E-mail:	ppembleton@unido.org
Internet:	http://www.unido.org/start/services/environment/envinfo

UN International Agencies

WB

Category: INTER-A

Institutions: The World Bank

Description: The World Bank is committed to incorporating environmental concerns into all aspects of the development process through the development and dissemination of environmentally sustainable technologies (ESTs). The Bank regards ESTs broadly. They range from engineering solutions, like improved irrigation technologies and advanced biomass gasification technology, to innovative uses of financial mechanisms as in the case of trust funds dedicated to nature conservation. ESTs can relate also to methodologies for incorporating environmental concerns into national accounts, and to overlaying such concerns onto national and sectoral development plans. The Bank is supporting the development of environmental information networks and pioneering methodological tools for soliciting and incorporating local community input into development planning.

Contact:	World Bank Public Information Centre	
Address:	1818 H Street NW, Washington DC, 20433	Tel: +1-202-458-5454
Country:	United States	Fax: +1-202-522-1500
E-mail:	pic@worldbank.org	
Internet:	http://www.worldbank.org/	

WHO

Category: INTER-A

Institutions: World Health Organization

Description: WHO has developed training workshop material on environmental control technology from an environmental health perspective and on the assessment of sources of air, water and land pollution and a guide on rapid source inventory techniques. In addition, WHO operates the Global Environmental Technology Network (GETNET) which contains a roster of participants, training material and a limited search capability for information on a specific areas of concern.

Contact:	Mr. Frank Lapensee, GETNET Project Officer	
Address:	Office of Global and Integrated Environmental Health, 1211 CH, Geneva 27	Tel: +41-22-791-3754
Country:	Switzerland	Fax: +41-22-791-4123
E-mail:	lapensee@who.ch	
Internet:	http://www.who.ch/	

UN International Agencies

WMO

Category: INTER-A

Institution:	World Meteorological Organisation
Description:	WMO promotes a range of programmes in the area of meteorology and operational hydrology. Within the WMO, the Hydrological and Water Resources Department has developed an information system dealing with technology transfer related to operational hydrology. Established in 1981, the Hydrological Operation Multi-purpose system (HOMS) has descriptions of over 400 components such as computer software, manuals and instruments for the collection, storage and analysis of hydrological data and for modeling of hydrological and water resource systems
Contact:	Dr. J. B. Miller, HOMS Office, Hydrology and Water Resources Department
Address:	C.P. 2300, CH-1211, Geneva 2
Tel:	+41-22-730-84-07
Country:	Switzerland
Fax:	+41-22-734-82-50
E-mail:	jmiller@www.wmo.ch
Internet:	http://www.wmo.ch/

Inter-Governmental Agencies

ADB

Category: INTER-B

Institution: Asian Development Bank

Description: The ADB has developed an Environmental Monitoring Information System which contains information on environmental actions throughout the project cycle.

Contact: Dr. Shih-Liang-Tu, Environmental Specialist, Office of Environment and Social Development

Address: ADB, Manila

Tel: +63-2-632-5338

Country: Philippines

Fax: +63-2-636-2195

E-mail: SLTu@mail.asiandevbank.org

Internet: http://www.asiandevbank.org/

EBRD

Category: INTER-B

Institution: European Bank for Reconstruction and Development

Description: EBRD is proactively involved in environmental activities particularly related to Eastern European countries and the Commonwealth of Independent States. The Bank provides financial support for environmental projects, regularly publishes reports on environmental topics and collects information on commercially available environmental databases.

Contact: Mr. Dariusz Prasek

Address: One Exchange Square, London, EC2A 2EH

Tel: +44-171-338-6000

Country: United Kingdom

Fax: +44-171-338-6100

E-mail:

Internet:

Inter-Governmental Agencies

EEA

Category: INTER-B

Institution: European Environment Agency

Description: The European Environment Agency is currently in the process of establishing clearinghouses in the areas of clean technology, life cycle analysis and risk assessment.

Contact: Mr. Ingvar Andersson, Project Manager

Address: Komgensnytorv 6, DK-1050, Copenhagen K

Tel: +45-3336-7100

Country: Denmark

Fax: +45-3336-7199

E-mail: ia@eea.dk

Internet: http://www.eea.dk

ETDE

Category: INTER-B

Institution: IEA Energy Technology Data Exchange

Description: Established in 1987, the ETDE is a global consortium of countries that have agreed to share energy-related scientific and technical information with the goal of improving international cooperation in energy research and development. The primary medium through which this collaborative effort occurs is an official information sharing system known as the Energy database, which also includes environmental information.

Contact: Ms. Debbie Cutler, ETDE Operating Representative

Address: PO Box 1000, Oak Ridge, Tennessee 37831

Tel: +1-423-576-1272

Country: United States

Fax: +1-423-576-2865

E-mail: debbie.cutler@ccmail.osti.gov

Internet: http://www.etde.org/

Inter-Governmental Agencies

GREENTIE

Category: INTER-B

Institution: IEA/OECD Greenhouse Gas Technology Information Exchange

Description: GREENTIE supports professionals involved in tackling greenhouse gas related problems by diffusing and exchanging information on technologies. It builds on the networks that IEA and OECD have established over 20 years in the global communication of information on science and technology among member countries.

Contact: Mr. Derk Kalverkamp, Programme Manager, GREENTIE IEA/OECD

Address: Swentiboldstraat 21, 6137 AE Sittard

Tel: +31-46-45-95-203

Country: Netherlands

Fax: +31-46-45-10-389

E-mail: nlnovbas@ibmmail.com

Internet: http://www.greentie.org/

ICGTI

Category: INTER-B

Institution: IEA International Centre for Gas Technology Information

Description: IEA International Centre for Gas Technology Information (ICGTI) supports the growth and internationalization of the gas market through the promotion of the exchange of gas technology and market information, thereby contributing to a more rapid market penetration of new gas technology. As Operating Agent, a joint corporation - Gas Technology Information Inc, - has been formed between the Gas Research Institute from the US and the Danish Gas Technology Centre.

Contact: Mr. A.H. Pedersen, ICGTI, Denmark

Address: Dr. Neergaards, Vej 5A, DK-2970, Horsholm, Denmark

Tel: +45-4576-2828

Country: Denmark

Fax: +45-4576-7575

E-mail: icgti@gasinfo.dk

Internet: http://www.gasinfo.dk/gasinfo/

Inter-Governmental Agencies

ICLEI

Category: INTER-B

Institution: International Council for Local Environmental Initiatives

Description: ICLEI is the international environmental agency for local government and founded in 1990 following the World Congress of Local Governments for a Sustainable Future. The Council serves as an international clearinghouse on sustainable development and environmental protection policies, programs and techniques (including Local Agenda 21) being implemented at the local level by local institutions.

Contact: Mr. Jeb Brugmann, ICLEI World Secretariat

Address: City Hall, East Tower, 8th Floor, Toronto, Ontario M5H 2N2 Tel: +1-416-392-1462

Country: Canada Fax: +1-416-392-1478

E-mail:

Internet: http://www.magic.ca./iclei/iclei.html

IEA

Category: INTER-B

Institution: International Energy Agency

Description: The IEA is an autonomous body which was established in 1974, within the framework of the OECD, to implement an international energy program. It carries out a comprehensive program of energy cooperation among 23 of the OECD's 26 member countries. The IEA has a programme of over 40 international energy collaboration projects covering Energy Technology Information Centres, Fossil Fuels Technologies, Renewable Energy Technologies and Nuclear Fusion Science and Technology. These projects are open to participants from all countries.

Contact: Dr. John Tilley, Head, Energy Technology Collaboration Division,

Address: 2, rue Andre Pascal, 75775 Paris Cedex 16 Tel:

Country: France Fax: +33-1-45-24-94-75

E-mail:

Internet: http://www.iea.org

Inter-Governmental Agencies

IEA - SHCP

Category: INTER-B

Institution: International Energy Agency, Solar Heating and Cooling Programme

Description: Initiated in 1977, the IEA Solar Heating and Cooling Programme was one of the first collaborative research and development agreements to be established. The participant countries carry-out a variety of projects intended to advance active solar, passive solar and solar photovoltaic technologies for building applications. Since the formation of the programme a total of 20 research projects have been initiated and 13 completed.

Contact:	Ms. Pamela Kunz, Executive Secretary	
Address:	1808 Corcoran Street NW, Washington DC 20009	Tel: +1-202-483-2393
Country:	United States	Fax: +1-202-265-2248
E-mail:	03116.1530@compuserve.com	
Internet:	http://www-iea.vuw.ac.nz:90	

IEA CADDET EE

Category: INTER-B

Institution: IEA CADDET Energy Efficiency

Description: The centre provides information to accelerate the adoption of energy efficient or renewable energy technologies through a programme of mutual exchange within the framework of the International Energy Agency. The programme operates through a network of dedicated centers of expertise in close association with national teams in the participating countries who supply information on relevant projects and act as intermediaries between the centers and decision-makers.

Contact:	Mr. Guus van Hoof	
Address:	P.O. Box 17, 6130 AA Sittard	Tel: +31-46-4595-224
Country:	Netherlands	Fax: +31-46-4510-389
E-mail:	nlnovcad@ibmmail.com	
Internet:	http://www/caddet_ee.org	

Inter-Governmental Agencies

IEA CADDET Renewables

Category: INTER-B

Institution: IEA CADDET Renewables

Description: The Centre provides information to accelerate the adoption of renewable energy technologies through a programme of mutual exchange within he framework of the IEA. ETSU in the United Kingdom has been designated as the Operating Agent and cooperates with National Teams in twelve member countries to collect and disseminate information on renewable technologies to users. The CADDET operation is concerned with demonstrated technologies, that is those which have left the R&D phase and have found the first commercial applications.

Contact: Mr. Philip Mann, Centre Deputy Manager

Address: ETSU, Harwell, Oxfordshire, OX11 ORA

Tel: +44-1235-432536

Country: United Kingdom

Fax: +44-1235-433595

E-mail: caddet.renew@aeat.co.uk

Internet: http://www.caddet.co.uk

IEA-HPC

Category: INTER-B

Institution: IEA Heat and Pump Centre

Description: The Centre is the focal point for the heat and pump related activities of the IEA based on a network of eight member countries. It aims to increase awareness and understanding worldwide and thereby accelerate the implementation of heat pump technology as a means to reduce energy consumption and limit harmful environmental effects, The IEA Heat and Pump Centre is operated by NOVEM, the Netherlands Agency for Energy and the Environment.

Contact: Mr. Jos Bouma

Address: P.O. Box 17, 6130, AA Sittard

Tel: +31-46-4595-236

Country: Netherlands

Fax: +31-46-4510-389

E-mail: nlnovhpc@ibmmail.com

Internet: http://www.heatpumpcentre.org

Inter-Governmental Agencies

OECD

Category: INTER-B

Institution:	Organization for Economic Cooperation and Development
Description:	The OECD records and studies the characteristics of past and actual economic growth. The OECD is the world's largest source of comparative data on the industrial economies. It produces a wide range of publications studies, comparative analyses and statistical reports covering, agriculture, environmental policy, pollution, hazardous substances, radioactive wastes, toxic substances, pollution control regulations, trans-national pollution, urban planning, energy sources and fuels, nuclear energy, energy research centers, technology transfer and development. It has examined the trade issues associated with the transfer of clean technologies, use of biotechnology in pollution prevention detection and remediation, and also the development of sustainable agricultural cleaner technologies. The OECD and IEA have supported the establishment of the CADDET system and the GREENTIE Initiative.
Contact:	Ms. Rebecca Hammer
Address:	2 rue Andre Pascal, 75775 Paris CEDEX 16
Tel:	+33-1-45-24-8500
Country:	France
Fax:	
E-mail:	
Internet:	http://cs1-hq.oecd.org/

SolarPACES

Category: INTER-B

Institution:	IEA Solar Power and Chemical Energy Systems Program
Description:	SolarPACES is an International Energy Agency (IEA) program designed to promote the commercial application of solar thermal power and solar chemical energy systems.
Contact:	SolarPACES Secretariat, Mr. Wilfried Grasse
Address:	Kleimannsruh 7, D-38518 Githorn-Winkel
Tel:	+49-5371-15742
Country:	Germany
Fax:	+49-5371-15755
E-mail:	solarpaces@dlr.de
Internet:	http://www.demon.co.uk/tfc/SolarPaces.html

Inter-Governmental Agencies

TIPS

Category: INTER-B

Institution: Technical Information Promotion System

Description: TIPS is an international NGO, created by the UNDP, which operates in national centres in thirty countries with a focus on providing a service to SMEs. Around 10% of the information that TIPS disseminates on science and technology relates to environmental issues including pollution and alternative energy technologies.

Contact: Mr. Gustavo Diverso, Consultant

Address: Juan Carlos Gomez 1437, Montevideo Tel: +598-2-96-24-98

Country: Uruguay Fax: +598-2-96-24-95

E-mail: tips@chasque.apc.org

Internet: http://tips.org.uy

Export Oriented Government Bodies

CIDA

Category: EXPORT-A

Institution: Canadian International Development Agency

Description: CIDA's mission, among other things is to deliver Canada ODA. The purpose of Canada's ODA is to support sustainable development in developing countries, in order to reduce poverty and to contribute to a more secure, equitable and prosperous world.

Contact: Ms. Linda Collette, Senior Environment Advisor

Address: 200 Promenade du Portage, Hull, Quebec K1A 0G4 Tel: +1-819-997-1167

Country: Canada Fax: +1-819-953-5367

E-mail: linda-collette@cida.gc.ca

Internet:

FINNIDA

Category: EXPORT-A

Institution: Finnish International Development Agency

Description: The substantive goals of FINNIDA are to promote economic development and to reduce poverty in recipient countries with emphasis on sustainable development, environmental and human rights protection.

Contact: Mr. J. Uosukainen, Environmental Adviser, Sectoral Services Division

Address: Katajanokanlaituri 3, 00169 Helsinki Tel: +358-0-1341-6451

Country: Finland Fax: +358-0-1341-6428

E-mail:

Internet:

Export Oriented Government Bodies

GTZ/ISAT

Category: EXPORT-A

Institution: GTZ/Information and Advisory Service on Appropriate Technology (ISAT)

Description: ISAT is a service of GTZ, a non-profit organization founded in 1975 by the Federal Ministry of Economic Cooperation and Development. The ISAT system was set up in 1988 and has become one of Germany's most important information sources on appropriate technologies which are defined as those which appear particularly apposite in the light of economic, social and cultural criteria.

Contact: Dr. Reinhard Woytek, Project Manager

Address: PO Box 5180, D-65726, Eschborn

Tel: +49-6196-79-3185

Country: Germany

Fax: +49-6196-79-7352

E-mail: reinhard.woytek@gtz.de

Internet: http://www.gtz.de/gate/isat

IDRC

Category: EXPORT-A

Institution: International Development Research Centre

Description: Canada's International Development Research Centre (IDRC) is committed to building a sustainable and equitable world. The 1970 Act of Parliament that created IDRC states:"The objects of the Centre are to initiate, encourage, support and conduct research into the problems of the developing regions of the world and into the means for applying and adapting scientific, technical and other knowledge to the economic and social advancements of those regions..." IDRC's mission is simply put: empowerment through knowledge. Research is the means by which knowledge is acquired and development is pursued. By funding research that meets the priorities of the developing world and improves the circumstances of the world's poor, the Centre has remained true to its founding vision.

Contact: Director, Head Office

Address: PO Box 8500, Ottawa, Ontario K1G 3H9

Tel: +1-613-236-6163

Country: Canada

Fax: +1-613-238-7230

E-mail: info@idrc.ca

Internet: http://www.idrc.ca/research.html

Export Oriented Government Bodies

JICA

Category: EXPORT-A

Institution: Japan International Cooperation Agency

Description: JICA deals with international cooperation with a particular focus on training and development studies. In June 1995, JICA launched a WWW server providing information on its activities and on the performance of Japanese ODA.

Contact: Mr. Kiyoshi Yoshimoto, General Affairs Section

Address: 10-5 Ichigaya-Honmura-cho, Shinjuku-ku, Tokyo 162 Tel: +81-3-3269-2911

Country: Japan Fax: +81-3-3269-2054

E-mail: fiw2@ific.or.jp

Internet: http://jica.ific.or.jp

NORAD

Category: EXPORT-A

Institution: Norwegian Agency for Development Cooperation

Description: NORAD is an independent directorate under the Ministry of Foreign Affairs. It is the executive body for Norwegian cooperation with the developing countries and administers the bilateral part of development assistance.

Contact: Dr. Gunnar Jordfald, Adviser

Address: Natural Resources Management Division, P.O. B ox 8034 DEP, 0030 Oslo Tel: +47-22-31-4400

Country: Norway Fax: +47-22-31-4401

E-mail:

Internet:

Export Oriented Government Bodies

ODA

Category: EXPORT-A

Institution: United Kingdom Overseas Development Administration

Description: The ODA is the aid wing of the Foreign and Commonwealth Office and as such manages Britain's aid to around 150 developing countries, as well as the states of central and eastern Europe and the Former Soviet Union and works in partnership with governments of developing countries, with international organizations, including the European Union and United Nations Agencies, and with voluntary bodies in Britain and overseas. The ODA also handles Britain's contribution to the international effort to tackle global environmental problems, and assistance for those affected by disasters. Working above all to reduce poverty world-wide, the ODA's job is to promote sustainable, lasting development - a task it tackles through projects, finance for materials and equipment, technical advice and support for research.

Contact: ODA Headquarters

Address: 94 Victoria St., London SW1E 5JL Tel: +44-171-917-7000

Country: United Kingdom Fax: +44-171-917-0019/17

E-mail:

Internet: http://www.oneworld.org/oda

SIDA

Category: EXPORT-A

Institution: Swedish International Development Authority

Description: The primary objective of SIDA is to improve the living conditions of the poor through its policies of economic growth, economic and social equality, economic and social determination, and democratic development. A fifth policy was later adopted in response to the needs of the times: to contribute towards the sustainable use of natural resources and protection of the environment in the recipient countries. This it carries out through its various activities including cooperation with government and non-government organizations, support of environmental technology development, education and training.

Contact: Mr. Magnus Magnum, Senior Programme Officer

Address: S-105 25 Stockholm Tel: +46-8-728-5100

Country: Sweden Fax: +46-8-612-0976

E-mail: mtorell@sida.se

Internet:

Export Oriented Government Bodies

USAEP

Category: EXPORT-A

Institution: United States-Asia Environmental Partnership

Description: Led by the United States Agency for International Development (USAID), US-AEP was founded in 1992 to assist in addressing environmental degradation and sustainable development issues in the Asia/Pacific region by mobilizing US environmental experience, technology, and practice. US-AEP activities are focused on the promotion of an Asian "clean revolution"- the extensive continuing development and adoption of less polluting and more resource efficient products, processes, and services in the Asian region. One of the programs in place to assist with this goal is the Environmental Technology Network for Asia (ETNA), which is a free government sponsored trade lead service.

Contact: Mr. Ted Yoder, ETNA Program

Address: ENTA, SA-2 Room 100, 515 22nd Street, NW, Washington, DC 20037 Tel: +1-202-835-0333

Country: United States Fax: +1-202-663-2760

E-mail: tyoder@usaid.gov

Internet: http://www.info.usaid.gov/welcome/ctis/enta.html

USAID

Category: EXPORT-A

Institution: United States Agency for International Development

Description: USAID is an independent U.S. federal government agency that conducts foreign assistance and humanitarian aid. Through its EP3 program the transfer of pollution prevention expertise and information to industry and governments in rapidly industrializing countries is made possible. Moreover, it provides technical assistance and training to industry and urban enterprises, and provides a clearinghouse for organizations interested in information on pollution prevention and cleaner production technologies.

Contact: Ms. Leith Harmon, Information Systems and Training

Address: USAID-EP3, 1530 Wilson Blvd., Suite 1000, Arlington, VA 22209 Tel: +1-703-312-86-80

Country: United States Fax: +1-703-351-61-66

E-mail:

Internet: http://www.info.usaid.gov (or try)

Export Oriented Non-Government Bodies

AET

Category: EXPORT-B

Institution: Applied Environmental Technologies

Description: AET is a non-profit organization active both regionally and internationally in disseminating information on global market opportunities for U.S. environmental businesses. In view of its objective of promoting information linkages and environmental technology transfer cooperation between industry, NGOs, government agencies, institutions and organizations in the U.S. and foreign countries, it operates the LINK System, an interactive information/communication system specifically adapted to match domestic and international buyers with U.S. providers of environmental technologies, services and products.

Contact: Ms. Jane Cheatham, LINK Program Manager

Address: 1215 Fourth Avenue, St. 329, Seattle, WA 98161 Tel: +1-206-622-5589

Country: United States Fax: +1-206-622-6343

E-mail: LINK@halcyon.com

Internet:

EEC

Category: EXPORT-B

Institution: Environmental Export Centre

Description: Provides information on Israel's environmental technologies and contacts related to air and water pollution, combatting desertification, wetlands, re-use of treated wastewater, solar energy, solid waste management, sludge treatment, waste water and sewage treatment, and water quality control.

Contact: Mr. Yitzhak Rozen, Director

Address: Israel Export Institute, 29 Hamered Street, PO Box 50084, Tel Aviv 68125 Tel: +972-3-514-2830

Country: Israel Fax: +972-3-514-2902

E-mail:

Internet:

UN International Agencies

GNET

Category: EXPORT-B

Institution: Global Network for Environmental Technology

Description: GNET is a gateway to constantly-updated information on innovative environmental technologies, business and news, with leads to marketing, intelligence, financing and contracting opportunities. GNET seeks to promote sustainable development and environmental remediation through technological innovation, with a focus on the commercialization of US Department of Energy developed applications. Featuring moderated discussion forums, as well as full-text search capabilities, GNET is an interactive community and an in-depth data-source for the environmental marketplace.

Contact: Mr. Joelle Jordon, Director of Information and Media Development

Address: 7010 Little River Turnpike, Annandale, VA 22003-9998 Tel: +1-703-750-6401

Country: United States Fax: +1-703-750-6506

E-mail: Joelle_Jordan@gnet.org

Internet: http://www.gnet.org/

IEBTI

Category: EXPORT-B

Institution: International Environmental Business & Technology Institute

Description: IEBTI has developed an information system called Envirotech On-line which provides details of environmental pollution control technology, products, services, research and financing provided by US environmental technology companies. Funding has been received from US Dept. of Commerce to launch the system.

Contact: Mr. John Gormally

Address: 100 Morrissey Bd., Boston, Mass 01125-3393 Tel: +1-617-287-7723

Country: United States Fax: +1-617-482-7347

E-mail:

Internet:

Export Oriented Non-Government Bodies

JSIM

Category: EXPORT-B

Institution: Japan Society of Industrial Machinery Manufacturers

Description: Set up in 1994 JSIM undertakes studies and publishes information on Japanese environmental equipment including technologies for air and water pollution control, waste treatment, noise and vibration. Information available on-line via Internet.

Contact: Mr. Moriji Takeda, General Manager

Address: Kikaishinko Building, Room No 405, 5-8 Shiba-Koen 3 Tel: +81-3-3434-6820

Country: Japan Fax: +81-3-3434-4767

E-mail:

Internet: http://www.unep.or.jp/gec/jsim_data/

KITI

Category: EXPORT-B

Institution: Kishimoto International Technology Institute

Description: KITI is a Japanese consulting firm specializing in international marketing of environmental technologies belonging to its clients. The Global Environmental Marketplace (GEM) on the WWW provides on-line access to a database of innovative environmental technologies.

Contact: Mr. Yukiya Tobe, President

Address: Shonan Laboratory, 1-7-42 Honkugenuma, Fujisawa, Kanagawa, 251 Tel: +81-466-25-5985

Country: Japan Fax: +81-466-25-5999

E-mail: kiti@infostream.ab.ca

Internet: http://www.infostream.ab.ca/gem/

Export Oriented Non-Government Bodies

VSM

Category: EXPORT-B

Institution: Swiss Association of Machinery Manufacturers

Description: The VSM is an industrial association active in mechanical and electrical engineering and related sectors. The VSM acts on behalf of its corporate members in relation to international and national aspects of business, economic policy and technology issues. The Environmental Technology Division of VSM regularly publishes a directory of products, knowledge and experience of Swiss companies in the field of environmental technology.

Contact: Mr. Robert Lüdi

Address: Kirchenweg 4, CH-8032, Zurich Tel: +41-1-384-48-44

Country: Switzerland Fax: +41-1-384-48-48

E-mail: vsm@dial.eunet.ch

Internet:

Research Institutes/Environmental Technology Centres

AIT

Category: RI/ETC

Institution: Asian Institute of Technology

Description: Operates the Environmental Systems Information Centre Network (ENSICNET), the Energy Technology Programme (ETP) and the Regional Energy Resources Information Centre (RERIC). Collects and repackages information in a wide range of environment, energy and technology fields for dissemination to users worldwide.

Contact: Professor R. D. Steuart, Executive Director

Address: Centre for Library and Information Resources, GPO Box 2754, Bangkok

Tel: +66-2-524-5853

Country: Thailand

Fax: +66-2-516-2126

E-mail: stueart@rccsun.ait.ac.th

Internet: http://www.ait.ac.th/AIT/research.html

APCTT

Category: RI/ETC

Institution: Asian and Pacific Centre for Technology Transfer

Description: Established in 1977, APCTT operates as a UN regional centre under the aegis of the Economic and Social Commission for Asia and the Pacific (ESCAP). The objectives of the centre are to assist the members of ESCAP through strengthening their capabilities to develop, transfer, adapt and apply environmentally sound technologies, and to identify and promote the transfer of technologies relevant to the region.

Contact: Dr. Vadim Y. Kotelnikov, Consultant

Address: Technology Bhawan, Off New Mehrauli Road, P.O. Box 4575, New Delhi-110 016

Tel: +91-11-6856276

Country: India

Fax: +91-11-6856274

E-mail: apctt@sirnetd.ernet.in

Internet:

Research Institutes/Environmental Technology Centres

ARCT

Category: RI/ETC

Institution: African Regional Centre for Technology

Description: The African Regional Centre for Technology is an intergovernmental organization set up by the Heads of African Governments in 1977. Established under the auspices of the Organization of African Unity and the United Nations Economic Commission for Africa, the centre presently has 31 member states. The centre's objectives are to promote regional technology transfer capacity and utilization by diffusing the results of research and development in member states in the fields of post-harvest technologies, renewable energy conversion systems, capital goods as well as information technologies. The centre is currently operating a technology management information and communication network called ARCTIS-NET which was established to support the development of technology and its application in Africa.

Contact: Dr. Ousmane Kane, Deputy Executive Director

Address: B.P. 2435, Immeuble Fahd Ben Abdel Aziz, Avenue Djily Mbaye, Dakar Tel: +221-23-77-12

Country: Senegal Fax: +221-23-77-13

E-mail: arct@endadakgn.apc.org

Internet:

AREC

Category: RI/ETC

Institution: Appropriate Renewable Energy Centre

Description: AREC is under establishment to collect information on renewable energy technologies (both indigenous and external sources of technologies) including solar PV, solar thermal, wind power, hydropower, biogasification and geothermal.

Contact: Dr. Semere Habtesion

Address: Ministry of Energy, Mines and Water Resources, P.O. Box 5285, Asmara Tel: +291-1-127944

Country: Eritrea Fax: +291-1-127652

E-mail:

Internet:

Research Institutes/Environmental Technology Centres

CAEPI

Category: RI/ETC

Institution:	Chinese Association for Environmental Protection Industry
Description:	CAEPI is in the process of developing the Chinese National Information System for Environmental Protection which includes general Environmental protection technologies including pollution control, pollution prevention, energy conservation and environmental management.
Contact:	Ms. Jiang Xiaoyu, Deputy Secretary General
Address:	9 Sanlihe Road, Haidian, Beijing 100835
Tel:	+86-10-839-39-30
Country:	China
Fax:	+86-10-839-37-48
E-mail:	
Internet:	

CAEPS

Category: RI/ETC

Institution:	Center for Alternative Energy and Propulsion Systems
Description:	The center is located at the George Mason University and provides an objective research resource for educational institutions, industrial companies, state and local governments, and community leaders in alternative forms of energy. CAEPS is composed of researchers, educators, entrepreneurs, students, decision-makers, activists and concerned members of the community. CAEPS works to promote the proliferation of alternative energy in transportation and undertakes educational projects that connect business, industry and government with this higher education institution.
Contact:	CAEPS
Address:	George Mason University, 4400 University Drive, Mail Stop 3F3, Fairfax, VA 22030
Tel:	+1-703-993-1277
Country:	United States
Fax:	
E-mail:	mjohn@gmu.edu
Internet:	http://www.caeps.gmu.edu/caeps/index.html

Research Institutes/Environmental Technology Centres

CAT

Category: RI/ETC

Institution: Centre for Alternative Technology

Description: Established in 1975, the Centre for Alternative Technology (CAT) is a cooperative company involved in the promotion of ideas and information on technologies which support rather than damage the environment. CAT is involved with educational activities, residential courses and runs a visitor centre. It also provides information/consultancy services and publishes on the subject of alternative technology. CAT publishes a database on suppliers, manufacturers relating to renewable energy, waste and biological buildings.

Contact: Ms. Lesley Bradham or Mr. Paul Trimby

Address: Information Office, Machynlleth, Powys, Wales, SY20 9A2 Tel: +44-1654-702400

Country: United Kingdom Fax: +44-1654-702782

E-mail: cat@gn.apc.org

Internet: http://www.foe.co.uk/CAT/

CCT

Category: RI/ETC

Institution: Center for Clean Technology

Description: CCT is based at the University of California, Los Angeles (UCLA). Founded in 1990 the center employs a multi-disciplinary approach to solving environmental issues. The goal of the center is to create a scientific, engineering and human resource base for the design of clean, economical and competitive technologies. The center provides expertise in six areas: pollution prevention, combustion and air toxics, water and wastewater treatment, intermedia transport and fate chemicals in the environment, remediation and restoration, and environmental risk reduction.

Contact: Mr. Dan Walham

Address: 7440 Boelter Hall, Los Angeles, CA 90024-1600 Tel: +1-310-206-3071

Country: United States Fax: +1-310-206-3906

E-mail: cct@seas.ucla.edu

Internet: http://cct.seas.ucla.edu

Research Institutes/Environmental Technology Centres

CEDARE

Category: RI/ETC

Institution: Centre for Environment and Development for the Arab Region and Europe

Description: The Centre for Environment and Development for the Arab Region and Europe (CEDARE) was established in 1992 as an international non-profit organizations with focus on environmental management capacity building in the areas of freshwater and land resource management, urbanization and human settlement programmes. Within CEDARE the Information Services Unit has been established to support the centre's mission of providing member states with services and information tools for decision-making, program development and policy formulation. It is anticipated that the unit will house holdings of spatially referenced databases and provide on-line access to major national and international databases and meta-databases, including those related to environmentally sound technologies.

Contact: Mr. Hassam Allam, Information Specialist

Address: 21/31 Giza Street, Nile Tower Building, Giza Tel: +20-2-570-18-59

Country: Egypt Fax: +20-2-570-32-42

E-mail: cedare@ritsec1.com.eg

Internet:

CenCITT

Category: RI/ETC

Institution: National Center for Clean Industrial and Treatment Technologies

Description: A research consortium dedicated to advancing the science, engineering, and implementation of pollution prevention. It was established in 1992 with founding members: Michigan Technological University (administrative lead), the University of Wisconsin - Madison, and the University of Minnesota - Twin Cities. CenCITT's mission is to assist industry in pollution prevention by devising clean technologies and process design tools, and by pursuing promising leads in treatment, beneficiation, and reuse where prevention is not feasible. CenCITT's goal is to make it easier for Industry to minimize waste generation and prevent pollution while preserving their economic competitiveness in the global marketplace. CenCITT is currently developing a series of software tools for efficiently delivering design information on clean technologies and pollution prevention methodologies to conceptual process and product designers.

Contact: Mr. P. Radecki

Address: Michigan Technology University, CenCITT Tel: +1-906-487-3143

Country: United States Fax: +1-906-487-3292

E-mail: ppradeck@mtu.edu

Internet: http://cpas.mtu.edu/cencitt

Research Institutes/Environmental Technology Centres

CEPIS

Category: RI/ETC

Institution: Pan American Center for Sanitary Engineering and Environmental Sciences

Description: Cooperation with pan-American countries in the development and adaptation of technologies for protection and promotion of environmental quality, specifically in the areas of water and waste management and control, is among the major objectives of CEPIS. It also provides training and disseminates specialized technical and scientific information through the Pan American Information Network on Environmental Health (REPIDISCA).

Contact: Ms. Marta Bryce

Address: Los Pinos 259, Camacho, Casilla 4337, Lima 100 Tel: +51-1-4371077

Country: Peru Fax: +51-1-4378289

E-mail: cepis@cepis.org.pe

Internet: http://www.paha.org/english/hepcepis.htm

CERES-GKN

Category: RI/ETC

Institution: CERES - Global Knowledge Network

Description: A consortium of universities, research laboratories, private companies, and governmental organizations are undertaking the creation of a network of global knowledge bases (to be known as CERES-GKN) to enable decision makers around the world to make environmentally sound, technologically feasible, and economically justifiable choices during the development of products and processes. The consortium has formed a not-for-profit corporation, CERES-GKN, Inc., headquartered in the University of Rome at Torvergata and with regional offices in the United States and Japan. Consortium members are seeking cooperative relations with world bodies and national initiatives that support the use of information technology for such purposes.

Contact: Professor Ramana Reddy, Concurrent Engineering Research Center

Address: P.O. Box 6506, West Virginia University, Morganto Tel: +1-304-293-7226

Country: United States Fax: +1-304-293-7541

E-mail: ceresgkn@cerc.wvu.edu

Internet: http://www.cerc.wvu.edu/ceres/ceres_index.html

Research Institutes/Environmental Technology Centres

CETC

Category: RI/ETC

Institution: California Environmental Technology Center

Description: CETC was established by the California Environmental Protection Agency and the University of California, San Diego - Scripps Institution of Oceanography. It is essentially a virtual organization designed to act as a catalyst to facilitate the development of environmental technologies.

Contact: Scripps Institution of Oceanography, University of California, San Diego

Address: 9500 Gilman Drive, 0241 La Jolla, CA 92093-0241 Tel: +1-619-534-8400

Country: United States Fax: +1-619-534-8270

E-mail: cetc@sio.ucsd.edu

Internet: http://sio.ucsd.edu/sp-progs/cetc/cetc.html

CIPMA

Category: RI/ETC

Institution: Environmental Research and Planning Center

Description: CIPMA is a private non-profit corporation founded in 1979 dedicated to fostering approaches to environmental issues which integrate social and economic dimensions. CIPMA's current research programme includes on emphasis on "soft technologies" related to sustainable development, environmental management strategies for SME's and environmental problem solving for local governments. The centre is also working on the design and effective use of environmental information systems.

Contact: Ms. Maria Teresa Lladser, Director, Information Systems

Address: CIPMA, Avda. Holanda 11009, Casilla 16392, Santiago 9 Tel: +56-2-334-1096

Country: Chile Fax: +56-2-334-1095

E-mail: mlladser@cipma.ci

Internet:

Research Institutes/Environmental Technology Centres

CJC

Category: RI/ETC

Institution: Clean Japan Centre

Description: The Clean Japan Centre was established in 1975 with support from the Ministry of International Trade and Industry and the private sector. Since its establishment, CJC has sought to promote waste management and recycling. CJC has also undertaken work on the development of recycling technology systems.

Contact: Mr. Wataru Kusumoto, Director, International Division

Address: 3-6-2 Toranomon, Minato-ku, Tokyo 105 Tel: +81-3-3432-6301

Country: Japan Fax: +81-3-3432-6319

E-mail:

Internet:

CREST

Category: RI/ETC

Institution: Center for Renewable Energy and Sustainable Technology

Description: CREST, a project of the non-profit Solar Energy Research and Education Foundation (SEREF), is dedicated to the promotion of renewable energy, energy efficiency, the environment and sustainable development. One of CREST's primary functions is to explore and demonstrate the use of advanced information and communication technologies in this field. CREST is the operator of Solstice, an on-line information service available via the Internet for energy professionals, policy-makers and anyone interested in expanding their knowledge about renewable energy, energy management, and sustainable technology.

Contact: Center for Renewable Energy and Sustainable Technology (CREST)

Address: SEREF, 777 N. Capitol Street, N.E., Suite 805, Washington D.C. 20002 Tel: +1-202-289-5370

Country: United States Fax: +1-202-289-5354

E-mail: info@crest.org

Internet: http://solstice.crest.org/

Research Institutes/Environmental Technology Centres

CWRT

Category: RI/ETC

Institution: Center for Waste Reduction Technologies

Description: Established in 1991, CWRT promotes programs to prevent pollution and conserve energy by carrying forward targeted research and technology transfer programs, and contributing to the growing international technological base. CWRT seeks to benefit its sponsors (including the US DOE) and society by identifying, developing and transferring environmentally beneficial technologies in a cost effective and timely manner by leveraging resources. CWRT has been involved with the development of the Clean Process Advisory System (CPAS). CRWT formed alliances with the Center for Clean Industrial and Treatment Technologies (CenCITT) and the National Center for Manufacturing Sciences (NCMS).

Contact: Dr. Jack Weaver, Director

Address: 345 East 47th Street, New York, NY 10017-2395 Tel: +1-212-705-7462

Country: United States Fax: +1-212-838-8274

E-mail: cwrt@aiche.org

Internet: http://www.che.ufl.edu/aiche/sponsored_research/cwrt/

DA

Category: RI/ETC

Institution: Development Alternatives

Description: The Development Alternatives aims to provide alternatives to conventional development assistance programmes with emphasis on smaller, decentralized initiatives that involve the participation of the beneficiaries. It operates an information system called the Development Alternatives Informatics Network (DAINET) and publishes a monthly newsletter, Development Alternatives.

Contact: Dr. Ashok Khosla, President

Address: B-32 Tara Crescent, New Mehrauli Road, Hauz Khaz, New Delhi 1100 Tel: +91-11-685-1158

Country: India Fax: +91-11-686-6031

E-mail: tara@sdalt.ernet.in

Internet:

Research Institutes/Environmental Technology Centres

DCED

Category: RI/ETC

Institution:	Danish Centre for Environment and Development
Description:	DCED is an interdisciplinary research center, with more than 25 experienced researchers. The members are from several different departments of the university and represent the Faculty of Technical and Natural Science and the Faculty of Social Sciences. Co-operation is carried out informally and interdisciplinary. However, research is usually divided into six areas each representing a topic determined approach. These areas are: 1. Economics and Environment; 2. Urban Environment and Urban Ecology; 3. Energy and Environment; 4. Industry and Cleaner Technology; 5. Transport and the Environment; 6. Geographic Information Systems and monitoring of the Environment.
Contact:	Ms. Annell Riberbol
Address:	Aalborg University, Fibigerstaede 13, DK 9220, Aalborg
Tel:	+45-98-15-42-11
Country:	Denmark
Fax:	+45-98-15-37-88
E-mail:	mar@i4.auc.dk
Internet:	

DPSTS

Category: RI/ETC

Institution:	Department of Science, Technology and Society, University of Utrecht
Description:	Researchers at the University have developed a database called ICARUS - Information System on Conservation and Application of Resources Using a Sector Approach. The database contains information on energy conservation techniques including energy improvement potentials and cost data. With ICARUS it is possible to evaluate possible effects of financial policy instruments, such as carbon taxes or investment subsidies. Furthermore, the cost effectiveness of energy conservation can be determined.
Contact:	Dr. Jeroen G. de Beer
Address:	Centrumgebouw-noord, Padualaan 14, 3584 CH Utrecht
Tel:	+31-30-537638/600
Country:	Netherlands
Fax:	+31-30-537601
E-mail:	debeer@chem.ruu.nl
Internet:	http://www.chem.ruu.nl/nws/www/nws.html

Research Institutes/Environmental Technology Centres

ECCJ

Category: RI/ETC

Institution: Energy Conservation Center, Japan

Description: The objective of ECCJ is to foster international technical cooperation in the field of energy conservation. Established in 1978, it provides training programmes in Japan and overseas and supports the establishment of centres for the promotion of energy conservation in key regions abroad . Through its ties with energy conservation organizations overseas and its sponsorship of international conferences, exchange of knowledge on energy conservation technologies is made possible.

Contact: Mr. Kazuo Usui, General Manager, Research Department

Address: Hatchobori, 3-19-9, Chuo-ku, Tokyo 104 Tel: +81-3-5543-3018

Country: Japan Fax: +81-3-5543-3021

E-mail:

Internet:

EIC

Category: RI/ETC

Institution: Environmental Information Centre - Czech Republic

Description: The EIC operates an environmental information system which exists in directory format and contains information on environmental pollution control products and services of Czech and Slovak firms.

Contact: Mr. Jan Bobek

Address: Melnicka 31, 250 02, Stara Boleslav Tel: +42-202-811298

Country: Czech Republic Fax: +42-202-811491

E-mail:

Internet:

Research Institutes/Environmental Technology Centres

EMS

Category: RI/ETC

Institution: Environmental Management Secretariat

Description: Based in the Latin American and Caribbean regional office of the Canadian IDRC in Montevideo, EMS was established to promote environmental research and management. The Secretariat is developing a mainly Internet based network to act as an information broker, and a channel through which IDRC and other donor funds can effectively flow to respond to the demands of network members. At this stage, EMS is collaborating with urban municipal organizations from the region and holding discussions with funders. In the future, EMS will expand into other areas of environmental management as its capacity develops and demands are identified.

Contact: Mr. Alexis Ferrand, EMS, c/o International Development Research Centre

Address: Plaza, Cagancha 1335, 9th Floor, P.O. Box 6379, 11100 Montevideo Tel: +598-2- 92-20-37/43

Country: Uruguay Fax: +598-2-92-02-23

E-mail: sema@chasque.apc.org

Internet: http://www.chasque.apc.org/sema

ERTC

Category: RI/ETC

Institution: Environmental Research and Training Centre

Description: National agency undertaking research and training in pollution control, monitoring and technology.

Contact: Dr. Monthip S. Tabucanon, Information Systems Office

Address: Technopolis, Khlong 5, Klong Luang, Pathumthani 12120 Tel: +66-2-577-1136

Country: Thailand Fax: +66-2-577-1138

E-mail:

Internet:

Research Institutes/Environmental Technology Centres

ETC

Category: RI/ETC

Institution: Environmental Technology Centre

Description: The Environmental Technology Centre, which was established by the Remote Area Developments Group, is located on the campus of Murdoch University and seeks to educate and inform the public about environmental technologies in the five spheres of human existence: food, water, shelter, energy and material resources. Both research and display facilities are available at the 1.7 ha Centre with a view to promoting an understanding of ESTs to students, industry and the community. The Centre's focus is on ESTs relevant to urban villages and remote/rural communities.

Contact: Associate Professor, Goen Ho, Director

Address: Institute for Environmental Science, Murdoch University, Murdoch WA 6150 Tel: +61-9-360-2167

Country: Australia Fax: +61-9-310-4997

E-mail: ho@essun1.murdoch.edu.au

Internet: http://wwwbes.murdoch.edu.au/

GEC

Category: RI/ETC

Institution: Global Environment Centre

Description: GEC is a supporting foundation to UNEP IETC. The Centre has considerable experience in the field of urban environmental issues and undertakes research on global environmental preservation. GEC is also actively involved in information dissemination on global environmental issues and technology. In December 1995, the Centre began operating a WWW site and an environmental technology database.

Contact: Mr. Susumu Ota, Director, Project Division

Address: 2-110 Ryokuchi Koen, Tsurumi-ku, Osaka, 538 Tel: +81-6-915-4121

Country: Japan Fax: +81-6-915-0181

E-mail: gec@unep.or.jp

Internet: http://www.unep.or.jp/gec/

Research Institutes/Environmental Technology Centres

GREC

Category: RI/ETC

Institution:	Gambia Renewable Energy Centre
Description:	GREC undertakes research and collects information on alternative sources of fuelwood and energy saving technologies.
Contact:	Gambia Renewable Energy Centre, Ministry of Trade, Industries and Employment
Address:	The Energy Division, Central Bank Building, Banjul
Tel:	
Country:	Gambia
Fax:	
E-mail:	
Internet:	

ICETT

Category: RI/ETC

Institution:	International Center for Environmental Technology Transfer
Description:	ICETT was established in 1990 by Mie Prefectural Government and Yokkaichi municipality as an environmental technology transfer centre. The centre's present name was adopted in February 1991. In close cooperation with the Mie Prefectural Government, the City of Yokkaichi, private companies and academia , ICETT seeks to promote the transfer of Japan's environmental pollution control technologies. The centre undertakes R&D and organizes training programs for participants from developing countries.
Contact:	Mr. Sumiyuki Yoshii, Executive Director
Address:	3690-1, Sakura-cho, Yokkaichi, 510-12
Tel:	+81-593-29-8111
Country:	Japan
Fax:	+81-593-29-8115
E-mail:	icett@tcp.ip.or.jp
Internet:	

Research Institutes/Environmental Technology Centres

IEAC

Category: RI/ETC

Institution: Industry Environmental Assessment Center

Description: The center operates China's Information System for Environmental Protection Industry (Engineering Industry). Information contained in the system is derived from the Chinese EPA journal. The system is in Chinese with English abstracts (available from April 1995) and covers industrial pollution control, cleaner production, environmental impact assessment, water recycling, energy conservation and environmental management.

Contact: Mr. Lou Shangyou, IAEC, Ministry of Engineering Industry

Address: 2 Capital Gymnasium, Nanlu, Haidian, Beijing

Tel: +86-1-834-0088

Country: China

Fax: +86-1-834-0825

E-mail:

Internet:

IEP

Category: RI/ETC

Institution: Institute of Environmental Protection

Description: The Institute of Environmental Protection is currently working on an EST database with support from the Polish State Committee for Scientific Research. The database will contain information on the Best Available Technology related to wastewater and industrial effluent control in the Polish context.

Contact: Dr. Pawel Blaszczyk, Director

Address: 5/11 Krucza Street, 00-548 Warsaw

Tel: +48-2-621-3670

Country: Poland

Fax: +48-2-29-5263

E-mail: earn/bitnet.jos@plearn.bitnet

Internet:

Research Institutes/Environmental Technology Centres

ILEC

Category: RI/ETC

Institution: International Lake Environment Committee

Description: ILEC was inaugurated in 1986 as a NGO approved by Japan's Environment Agency and the Ministry of Foreign Affairs. ILEC is comprised of a Board, an international Scientific Committee and three administrative divisions (planning, general affairs and research). Among it's goals, ILEC seeks to accumulate and disseminate information related to the environment and management of lakes and reservoirs throughout the world. Recently, as a supporting foundation to UNEP-IETC, ILEC has become involved in a database development covering ESTs related to lake and reservoir environmental management.

Contact: Mr. Yoshio Shimazu, Head of Research Section

Address: 1091 Oroshimo-cho, Kusatsu City, Shiga 525 Tel: +81-775-68-4567

Country: Japan Fax: +81-775-68-4568

E-mail: ilec@WWW.biwako.or.jp

Internet: http://www.biwako.or.jp/ilec/

IPTRID

Category: RI/ETC

Institution: International Programme for Technology Research in Irrigation and Drainage

Description: The IPTRID Network aims to improve the flow and exchange of technical information in the irrigation and drainage sector. To do this it provides a number of network services to professionals and scientific staff, and encourages better communication between them.

Contact: IPTRID

Address: Howbery Park, Wallingford, Oxfordshire OX10 8BA Tel: +44-1491-835381

Country: United Kingdom Fax: +44-1491-832233

E-mail: hrmkt@hydres.co.uk

Internet: http://www.hrwallingford.co.uk/iptrid-network-info.html

Research Institutes/Environmental Technology Centres

IRC

Category: RI/ETC

Institution:	International Water and Sanitation Centre
Description:	IRC is an independent, non-profit organization, supported by and linked with the Netherlands Government, UNDP, the United Nations Children's Fund, the World Bank Water and Sanitation Programme and the WHO. For the latter it acts as a collaborating centre for Community Water Supply and Sanitation. IRC aims at change towards more people-oriented water and environmental sanitation programmes. It seeks to achieve this through the generation, communication and application of information on priority issues, and increasingly, through capacity building for support services and information management at country level in collaboration with resource centres and partner institutions, with all those concerned being involved in a continuous learning process. The IRC documentation centre contains more than 10,000 documents dealing with low-cost water supply and sanitation.
Contact:	The Director
Address:	PO Box 93190, 2509 AD, The Hague
Country:	Netherlands
E-mail:	ircwater@antenna.nl
Internet:	http://aqua.ccwr.ac.za/~buckley/ircpub.html

Tel: +31-70-33-141-33

Fax: +31-70-38-140-34

ITMIN

Category: RI/ETC

Institution:	Industrial Technology Market Information Network
Description:	ITMIN was set-up as a public/private initiative, with the assistance of UNDP and UNIDO. The Network plays an information brokerage role, through the provision of inquiry services for the business community and is gearing up to disseminate EST related information.
Contact:	Mr. Vijit T. Ratnarajah, Chief Operating Officer, or Mr. Ruwan Weerawardena, Product Manager
Address:	PO Box 2151, 121 Independence Square, Colombo 07
Country:	Sri Lanka
E-mail:	
Internet:	

Tel: +94-1-683948

Fax: +94-1-683945

Research Institutes/Environmental Technology Centres

JSPL

Category: RI/ETC

Institution: Jyvaskyla Science Park Limited

Description: Based in the Jyvaskyla Science Park Ltd in Finland, this centre is a focal point for waste processing technology and provides advice on environmental management. Future development areas include technologies for recycling and re-use of waste and environmental solutions for agriculture. The Centre also deals with environmental monitoring and control equipment.

Contact: Mr. Jukka Akselin, Director, Energy and Environmental Technology

Address: Ylistonmeantie 31, Jyvaskla F-40500 Tel: +358-41-650-114

Country: Finland Fax: +358-41-650-120

E-mail: jukka.askelin@jsp.fi

Internet: http://www.jsp.fi/jsp

KfK/AFAS

Category: RI/ETC

Institution: Karlsruhe Research Centre

Description: FIZ Karlsruhe has developed a database called the TA (Technology Assessment) Database which includes studies on the potential of new technologies, technological forecasting and monitoring as well as other aspects of technology assessment.

Contact: Dr. Eckardt Lessman, Senior Scientist

Address: PO Box 3640, D-76021 Karlsruhe Tel: +49-7247-39-94

Country: Germany Fax: +49-7247-48-06

E-mail: lessman@itas.kfr.de

Internet:

Research Institutes/Environmental Technology Centres

KINITI

Category: RI/ETC

Institution: Korean Industry and Technology Information Centre

Description: KINITI has been mandated to assume a key role in the establishment of a nation-wide information dissemination system to support the industrial and technological development of Korea. The Institute performs three key roles: (1) undertakes surveys of the supply and demand for technologies, (2) organizes seminars and workshops on technology transfer and (3) develops databases on technology transfer information.

Contact: Mr. Jae-Bok Kim, Director, Technology Transfer Information Centre

Address: 206-9 Choengryangri-Dong, Dongdaemum-ku, PO Box 205, Choengryangri, Seoul

Tel: +82-2-962-6211

Country: Korea

Fax: +82-2-962-7198

E-mail: kimjae@kinins.kiniti.re.kr

Internet: http://www.kiniti.re.kr

LIPI

Category: RI/ETC

Institution: Indonesian Institute of Sciences

Description: The main task of the Indonesian Institute of Sciences (LIPI) is to assist the President of the Republic of Indonesia with the organization of scientific and technological research and development activities. Within LIPI, the Technology Information Service has been involved with EST information dissemination and in 1987 established the Indonesian Appropriate Technology Information System (SITTGI).

Contact: Mrs. Rukasihi Dardjat, Head, Technology Information Service, Scientific Documentation and Information

Address: Jl, Cisitu/Snagkuriang Bangdung 40135

Tel: +62-22-250-2832

Country: Indonesia

Fax: +62-22-250-4755

E-mail: rukasih@bajitilipi.go.id

Internet:

Research Institutes/Environmental Technology Centres

MECTAT

Category: RI/ETC

Institution: Middle East Centre for the Transfer of Appropriate Technology

Description: MECTAT is an environmental resource centre promoting environmentally sound technologies and environmental awareness. It was established in 1982 and is affiliated with Middle East Engineers and Architects Ltd. (MEEA), a consulting firm based in Beirut, Lebanon. The centre's main areas of interest include: waste management, renewable energy, sustainable agriculture, fresh water resources, housing, environmental awareness raising and environmental management. Its activities focus on research, development, field testing, training, consultancy and promotion of technical know-how.

Contact: Mr. Boghos Ghougassian, MECTAT Coordinator

Address: Middle East Engineers and Architects Ltd., P.O. Box 113, Beirut

Tel: +961-1-341323

Country: Lebanon

Fax: +961-1-346465

E-mail:

Internet:

MEWIN

Category: RI/ETC

Institution: Middle East Water Information Network

Description: MEWIN is an international, non-profit, professional association founded with the assistance of the Ford Foundation in 1994 by a group of leading water specialists from nations of the Middle East, Europe, and North America. MEWIN's purpose is to improve the management and conservation of water resources in the Middle East, to promote the peaceful, cooperative use of this vital resource, motivate sound environmental planning in the region, and to encourage the sharing and exchange of information and data which is deemed essential to the achievement of all of MEWIN's goals.

Contact: Professor Thomas Naff, MEWIN Executive Director

Address: 847 Williams Hall, University of Pennsylvania, Philadelphia, PA 19104-6305

Tel: +1-215-898-8918

Country: United States

Fax: +1-215-747-6211

E-mail: mewin@ssc.upenn.edu

Internet: http://www.ssc.upenn.edu/~mewin

Research Institutes/Environmental Technology Centres

NACESTID

Category: RI/ETC

Institution: National Centre for Scientific and Technological Information

Description: NACESTID is responsible for information collection and dissemination in the fields of scientific, technological and environmental information. It provides access to environmental databases and is the Vietnam INFOTERRA National Focal Point. Currently, national capacity building and strengthening of scientific, technological and environmental information systems are priorities for the Vietnamese administration in order to support effective technology transfer.

Contact: Mr. Nguyen Hai Yen, Chief, Information Division

Address: 24 Ly Thuoung Kiet, Hanoi

Tel: +840-4-263-108

Country: Vietnam

Fax: +840-4-263-127

E-mail: yen.nacestid@vietap.tool.nl

Internet:

NATTA

Category: RI/ETC

Institution: Network of Alternative Technology & Technology Assessment

Description: NATTA undertakes research on renewable energy and operates an on-line information system dealing with energy technologies called Renew On-line.

Contact: Mr. D.A.Elliot, Energy & Environment Research Unit, Faculty of Technology

Address: Walton Hall, Open University, Milton Keynes, Bucks, MK7 6AA

Tel: +44-1908-654638

Country: United Kingdom

Fax: +44-1908-3744

E-mail: DAElliotAopen.ac.uk

Internet: http://eeru.www.open.ac.uk

Research Institutes/Environmental Technology Centres

NEERI

Category: RI/ETC

Institution: National Environmental Engineering Research Institute of India

Description: NEERI was established in 1958 and is a constituent laboratory under the Council of Scientific and Industrial Research (CSIR), Government of India. It has developed a database which contains 510 case studies on cleaner technologies. From 1996, the Indian Centre for Promotion of Cleaner Techrologies (ICPC) will be established at NEERI.

Contact: Dr. P. Khana, Director

Address: Nehru Marg, Nagpur 440020 Tel: +91-712-223-893

Country: India Fax: +91-712-222-725

E-mail: peekay@csneeri.ren.nic.in

Internet:

NETCEN

Category: RI/ETC

Institution: National Environmental Technology Centre

Description: The National Environmental Technology Centre (NETCEN) is part of AEA Technology, a major science and engineering organization with staff based in the UK and in an increasing number of offices overseas. NETCEN provides research, consultancy and technical services across all environmental media, including monitoring and management of air and water quality, monitoring of emissions from industrial processes, waste management, and technical emergency response. It is also heavily involved in environmental technology transfer activities.

Contact: Mr. Maurice Alphandary, AEA Technology

Address: Culham, Abingdon, Oxfordshire, OX14 3DB Tel: +44-1235-463811

Country: United Kingdom Fax: +44-1235-463389

E-mail: maurice.alphandary@aeat.co.uk

Internet:

Research Institutes/Environmental Technology Centres

NIES

Category: RI/ETC

Institution: National Institute for Environmental Studies

Description: Since its establishment in 1974 as the main research wing of the Japanese Environment Agency, NIES has been conducting unique and innovative studies for the protection of the environment. The focus of the NIES is on preventive rather than curative approaches to the environmental problems.

Contact: Mr. Hiroshi Hatano, Director Environmental Information Center

Address: Onogawa, Tsukuba City, Ibaraki 305 Tel: +81-298-50-2341

Country: Japan Fax: +81-298-51-4732

E-mail: nfp@neis.go.jp

Internet: http://www.nies.go.jp

NREL

Category: RI/ETC

Institution: National Renewable Energy Laboratory

Description: NREL was established by the Solar Energy Research, Development and Demonstration Act of 1974 as a national center for federally sponsored solar energy research and development. Two EST related information systems are based at the Laboratory. These are the Energy Efficiency and Renewable Energy Network (EREN) and the Energy Efficiency and Renewable Energy Clearinghouse (EREC).

Contact: Public Affairs Department

Address: 1617 Cole Boulevard, Golden, Colorado 80401-3393 Tel: +1-303-275-4090

Country: United States Fax: +1-303-275-4091

E-mail: webmaster@nrel.gov

Internet: http://www.nrel.gov/

Research Institutes/Environmental Technology Centres

NTTC

Category: RI/ETC

Institution: National Technology Transfer Center

Description: The National Technology Transfer Center (NTTC) was established by the US Congress to link US companies with federal laboratories in order to turn government research results into practical, commercially-relevant technology. One specific sector deals with environmental technology transfer and is referred to as Environmental Technology Gateway.

Contact: Mr. Chuck Monfradi, Systems Operator

Address: Jesuit College, 316 Washington Avenue, Wheeling, WV 26003 Tel: +1-304-243-2551

Country: United States Fax: +1-304-243-2539

E-mail: webmaster@nttc.edu

Internet: http://www.nttc.edu/

NWRI

Category: RI/ETC

Institution: National Water Research Institute

Description: The NWRI is Canada's largest freshwater research establishment. Its research generates scientific knowledge and expertise essential for sustainable water resource in Canada and worldwide.

Contact: Manager, Programme Liaison Unit, Environment Canada

Address: Box 5050, 867 Lakeshore Road, Burlington, Ontario, L7R 4A6 Tel: +1-416-336-4503

Country: Canada Fax: +1-416-336-4989

E-mail:

Internet:

Research Institutes/Environmental Technology Centres

OCETA

Category: RI/ETC

Institution: Ontario Centre for Environmental Technology Advancement

Description: OCETA is part of the network of Canadian Environmental Technology Advancement Centres. It is a private sector, not-for-profit corporation committed to helping small and medium-sized enterprises (SME's) overcome the barriers involved in the commercialization of new environmental technologies. OCETA is an industry-led initiative dedicated to providing Ontario-based companies with a wide range of technical and business based services. OCETA acts as a critical link in technology transfer, providing access to engineering, regulatory, financial, educational and management services, along with information resources and key support services.

Contact: Ontario Centre for Environmental Technology Advancement (OCETA)

Address: 63 Polson Street, 2nd Floor, Toronto, Ontario, M5A 1A4 Tel: +1-416-778-5264

Country: Canada Fax: +1-416-778-5624

E-mail: oceta@hookup.net

Internet: http://www.oceta.on.ca/

PASTIC

Category: RI/ETC

Institution: Pakistan Science and Technology Information Centre

Description: National agency which collects, organizes and disseminates information on all aspects of the environment. In its capacity as an INFOTERRA National Focal Point it provides information on all aspects of the environment.

Contact: Dr. Mohammad Afzal, Director-General

Address: National Centre, Quaid-i-Azam University, Islamabad Tel: +92-51-811-375

Country: Pakistan Fax: +92-51-811-381

E-mail:

Internet:

Research Institutes/Environmental Technology Centres

REFIA

Category: RI/ETC

Institution: Russian Ecological Federal Information Agency

Description: REFIA is the agency tasked by the Ministry for Environmental Protection to disseminate information on environmental matters including pollution control, industrial and municipal wastes control and utilization, agriculture, water and biotechnology.

Contact: Mr. N.G. Rybalsky, Director General

Address: 4/6 ul. B. Gruzinskaya, 123812 Moscow

Tel: +70-95-284-8235

Country: Russia

Fax: +70-95-284-85-50

E-mail: itc@refia.msk.ru

Internet:

RIET

Category: RI/ETC

Institution: Regional Institute of Environmental Technology

Description: Supported as a joint initiative of the European Commission and the Singapore Institute of Standards and Industrial Research, Regional Institute of Environmental Technology (RIET) is a not-for-profit organization. The Institute is involved in the promotion and exchange of know-how and skills in the fields of environmental management and technology between Europe and Asia. It also seeks to provide assistance to regional policy makers towards better industrial production, and to develop expert human resources in this field. It acts as bridgehead between European and Asian companies which supply and use environmental technology and services.

Contact: Dr. Philippe Bergeron, Managing Director

Address: 3 Science Park Drive, SISIR Annex #04-08, Singapore 118223

Tel: +65-777-2685

Country: Singapore

Fax: +65-773-2800

E-mail: RIET@pacific.net.sg

Internet:

Research Institutes/Environmental Technology Centres

RITE

Category: RI/ETC

Institution: Research Institute for Innovative Technology

Description: RITE was established in July 1990 to promote the "New Earth 21" program with the aim of developing research in advanced industrial technologies that are environment friendly.

Contact: Mr. Shoichiro Kobayashi, President

Address: 2-9-2 Kizugawadai, Kizu-cho, Soraku-gun, Kyoto 619 Tel: +81-7747-5-2302

Country: Japan Fax: +81-7747-5-2314

E-mail:

Internet:

RRETC

Category: RI/ETC

Institution: River Road Environmental Technology Centre

Description: RRETC develops and implements technologies to measure and control air pollution and to respond to contamination caused by oil and chemical spills and hazardous materials leakage.

Contact: The Director

Address: Environment Canada, 3439 River Road, Gloucester, K1A OH3 Tel: +1-613-998-3671

Country: Canada Fax: +1-613-998-0004

E-mail:

Internet:

Research Institutes/Environmental Technology Centres

SAWIC

Category: RI/ETC

Institution: South African Water Information Centre

Description: The Water Research Commission of South African, as part of its commitment to technology transfer, established the South African Water Information Centre (SAWIC) in 1974. The main function of the centre is to develop the bibliographic database WATERLIT, and to act as a comprehensive referral centre for water-related enquiries.

Contact: Mrs. Martha Pretorius, Manager

Address: CSIR Information Services, PO Box 395, Pretoria 0001 Tel: +27-12-841-3362

Country: Republic of South Africa Fax: +27-12-349-1154

E-mail: mpretori@csir.co.za

Internet: http://africa.cis.co.za:81/env/sawic/main.html

SEI

Category: RI/ETC

Institution: Stockholm Environment Institute

Description: Stockholm Environment Institute (SEI) was established by the Swedish Parliament in 1989 as an independent Foundation for the purpose of carrying out global and regional environmental research. The Institute is active in international initiatives on environment and development issues and, for example, made substantive contributions to the preparatory work of the United Nations Conference on Environment and Development (UNCED), including the action plan Agenda 21. The research areas covered are urban environment, common property management, energy resources, atmospheric environment, climate change, cleaner production, freshwater resources, economic instruments and biotechnology.

Contact: Dr. Arno Rosemarin, Information Manager

Address: SEI-Stockholm, Lilla Nygatan 1, Box 2142, S-103 14 Stockholm Tel: +46-8-723-0260

Country: Sweden Fax: +46-8-723-0348

E-mail: seihq@nordnet.se or seihq@nn.apc.org

Internet: http://nn.apc.org/sei/

Research Institutes/Environmental Technology Centres

SERC

Category: RI/ETC

Institution: Sokoto Energy Research Centre

Description: SERC collects and disseminates information on renewable energy technologies and energy conservation including improved wood burning stove, solar photovoltaic applications, biogas technology applications and solar thermal applications.

Contact: Dr. A. T. Atiku, Director

Address: Usamanu Danfodiyo University, P.M.B. 2346, Sokoto

Tel:

Country: Nigeria

Fax: +234-60-234052

E-mail:

Internet:

TERI

Category: RI/ETC

Institution: Tata Energy Research Institute

Description: TERI is one of India's leading energy research centers. TERI was established in 1974 as a non-profit research institute with funding from the Tata Chemical conglomerate. The Institute works on energy efficiency issues, depletion of finite energy resources and the environmental implications from the national to global levels. TERI maintains a database on renewable energy, energy conservation, and pollution control technologies. The database is intended for energy planners involved in establishing priorities for further technology and research investments and to provide information for industrial entrepreneurs. TERI also publishes three abstracting journals: Abstracts of Selected Solar Energy Technology (ASSET), TERI Information Digest on Energy (TIDE) and TERI Information Service in Global Warming (TISGLOW).

Contact: Mr. Nalini Ranganathan

Address: 9 Jor Bagh, New Delhi 110 003

Tel: +91-11-462-2246

Country: India

Fax: +91-11-462-1770

E-mail: mailbox@teri.ernet.in

Internet:

Research Institutes/Environmental Technology Centres

Waterweb

Category: RI/ETC

Institution: Waterweb (tm)

Description: Waterweb provides water professionals around the world with a host of information on all facets of water related technology. This includes details of water treatment consultants, engineers, chemicals and equipment. In addition, it covers water testing equipment and services, water and wastewater utilities, water conservation technology and services. A wide range of water research, libraries and databases are introduced through the Waterweb Homepage as well as strategic links to other water related WWW sites.

Contact: Director, Digital Resources Corporation

Address: 7905 E. Greenway Road. Suite 106, Scottsdale, Arizona Tel: +1-602-948-3555

Country: United States Fax: +1-602-948-1910

E-mail: water@amug.org

Internet: http://www.waterweb.com

WEDC

Category: RI/ETC

Institution: Water, Engineering and Development Centre

Description: WEDC is responsible for the operation of the Global Applied Research Network (GARNET), an activity that is designed to facilitate the sharing of applied research information between researchers working in the water and sanitation sector throughout the world. The method to achieve this is through informal, low-cost and decentralized networking links.

Contact: Dr. David L. Saywell

Address: Loughborough University, Leicestershire, LE11 3TU Tel: +44-1509-222885

Country: United Kingdom Fax: +44-1509-211079

E-mail: D.L.Saywell@lut.ac.uk

Internet: http://info.lut.ac.uk/departments/cv/wedc/index.html

Research Institutes/Environmental Technology Centres

WRPC

Category: RI/ETC

Institution: Water Re-use Promotion Centre

Description: WRPC was set in 1973 in order to develop and spread water production technologies designed to deal with water recycling, desalinization and environmental problems. The centre seeks to promote the transfer of advanced environmental technologies to countries suffering from water shortages. It publishes a quarterly journal entitled Zosui Gijutsu (Water Technology).

Contact: Dr. Totaro Goto, Managing Director

Address: 3F Randic Akasaka Building, 2-3-4 Akasaka, Minato-ku, Tokyo 107

Tel: +81-3-3583-9431

Country: Japan

Fax: +81-3-3583-9436

E-mail:

Internet:

WTC

Category: RI/ETC

Institution: Wastewater Technology Centre

Description: Established in 1971, the Wastewater Treatment Technology Centre (WTC) provides services that address pollution prevention, pollution control, site remediation, residue management need and analysis. The centre promotes responsible environmental stewardship through the development, application and commercialization of effective environmental protection systems and know-how providing cost-effective solutions for industry and government. WTC's pollution control expertise is directed towards the industrial sector involved in process improvements, product recovery, water and wastewater treatment plant optimization and infrastructure management.

Contact: Mr. Bruce Jank, Chief Executive Officer

Address: Box 5068,867 Lakeshore Road, Burlington, Ontario, L7R 4L7

Tel: +1-905-336-4855

Country: Canada

Fax: +1-416-336-8912

E-mail:

Internet:

Database Servers

BCRI

Category: DS

Institution: British Columbia Research Institute

Description: BCRI is a privately held, multi-disciplinary technical development and services company focused in the areas of Forest Biotechnology, Environmental Services and Technology, Alternative Fuels and Transportation, Ocean Engineering and Ergonomics. BCRI's Environment and Technology group has uniquely integrated expertise in Waste Treatment and Pollution Prevention, Environmental Management and Consulting, Laboratory Services, Site Monitoring, Occupational Hygiene and Clean Transportation Systems. BCRI is also the Centre for Alternative Fuels Transportation and provides on-line access to the CATF Database, a collection of over 2600 citations related to the alternative fuels industry.

Contact: Dr James Hill, Director, Environmental Sciences and Technology or Mr. Jay Code.

Address: 3650 Wesbrook Mall, Vancouver, B.C. V6S 2L2 Tel: +1-604-224-4331

Country: Canada Fax: +1-604-224-0540

E-mail: hill@bcr.bc.ca or code@bcr.bc.ca

Internet: http://www.bcr.bc.ca/

CEDAR

Category: DS

Institution: Central European Environmental Data Request Facility

Description: CEDAR was officially set up in 1991 as a project of the Austrian Federal Ministry for the Environment, Youth and Family. It is administered by the International Society for Environmental Protection (ISEP) and was conceived as state of the art information centre designed specifically to: deliver environmental information to regional individuals and groups; identify appropriate sources of information, groups and contacts in other parts of the world to promote information and dialogue exchange; and develop meta-information sources. Access to the Internet has become the backbone of CEDAR operations. A number of EST related databases are available via the centre including ICPIC, ATTIC, and VISITT.

Contact: Mr. Joerg Findeisen

Address: Marxergasse 3/20, 1030 Vienna Tel: +43-1-715-5879

Country: Austria Fax: +43-1-715-2829

E-mail: cedar-info@cedar.univie.ac.at

Internet: http://pan.cedar.univie.ac.at/

Database Servers

CONICYT

Category: DS

Institution: National Commission for Scientific and Technological Research

Description: CONICYT was created in 1967 to assist the government in scientific and technological matters. Its main objectives are: (1) to define science and technology policies at the national level; (2) to evaluate the national science and technology system; (3) to offer graduate training fellowships; (4) to finance research and development programs and projects; (5) to administer bilateral and multilateral international cooperation agreements; (6) to disseminate scientific and technological knowledge and; (7) to promote the use of scientific and technological information systems. CONICYT maintains various databases on scientific activities in Chile and publishes a document called Chilean Science Indicators). Through CONICYT, Chile takes part in programs such as: General Information Program (GIP) of UNESCO; Environmental Information Program, INFOTERRA; Forestry, Agriculture and Animal Husbandry Research Information Program, CARIS/FAO; International Standard Serial Number Network, ISSN Network.

Contact: Mrs. Anna Maria Prat Trabal, Director of Information

Address: Canada 308 - Bernarda Morin, 551 Casilla 297-V, Correo 21, Santiago

Tel: +56-2-274-4537

Country: Chile

Fax: +56-2-209-6729

E-mail: info@conicyt.cl

Internet: http://www.conicyt.cl/

CSA

Category: DS

Institution: Cambridge Scientific Abstracts

Description: CSA is a publisher of scientific and technical information which has been in operation for over 30 years. It provides an encyclopedic reference guide to environmental information through the Environmental Routenet, on-line via Internet.

Contact: Marketing Department

Address: 7200 Wisconsin Avenue, Bethesda, MD 20814-4823

Tel: +1-301-961-6750

Country: United States

Fax: +1-301-961-6720

E-mail: market@csa.com

Internet: http://www.csa.com

Database Servers

ECHO

Category: DS

Institution: European Commission Host Organization

Description: ECHO was set up by DG XIII/E in 1980 to encourage the development and promote understanding of information services in the European Community. Present activities are undertaken within the framework of the CE IMPACT (Information Market Policy ACTions) Programme specifically in the area of awareness, user support and information exchange with the market-place. As a non-commercial host organization, ECHO is able to offer, on a European level, assistance and capabilities which extend beyond those associated with a conventional host. EST related databases at ECHO include EUREKA, CORDIS and SESAME.

Contact: EUREKA Secretariat

Address: PO Box 2373, L-2373 Tel: +352-34981-200

Country: Luxembourg Fax: +352-34981-234

E-mail: helpdesk@echo.lu

Internet: http://www2.echo.lu/echo/en/menuecho.html

ESA-IRS

Category: DS

Institution: European Space Agency - European Space Research Institute

Description: ESRIN is one of the four establishments of the European Space Agency. ESRIN's main activities are centered on the acquisition, archiving and dissemination of data from Earth Observation missions in particular ERS-1 for which it is responsible for operating the ground infrastructure needed. ESRIN's main function is as the Agency's data handling and dissemination centre, being at the forefront of technologically advanced information systems. EST related databases available via ESRIN include AGRIS, AQUALINE, ASFA, CABI, COMPENDEX*PLUS, EDF-DOC, ENVIROLINE, NTIS, PASCAL, POLLUTION ABSTRACTS and TROPAG.

Contact: ESA/ESRIN

Address: Via Galileo Galilei, I-00044 Frascati Tel: +39-6-94-18-01

Country: Italy Fax: +39-6-94-18-0361

E-mail: webmaster@esa.it

Internet: http://www.esrin.esa.it/htdocs/esairs

Database Servers

JICST

Category: DS

Institution: Japan Information Centre for Science and Technology

Description: Established in 1957, JICST has maintained its position as a central organization providing scientific and technical information activities in Japan. Founded under an act of the Japanese Government to specifically establish JICST, the organization gathers, processes and disseminates scientific and technical information from not only Japan but also extensively from around the world. JICST is operated partly on a self-supporting basis and also through Japanese Government appropriation under the supervision of the Science and Technology Agency.

Contact:	Mr. Kimihiko Saito, General Manager	
Address:	Office of International Affairs, 5-3 Yonbancho, Chiyoda-ku, Tokyo, 102	Tel: +81-3-5214-8403
Country:	Japan	Fax: +81-3-5214-8430
E-mail:	k2saitou@mr.jicst.go.jp	
Internet:	http://www.jicst.go.jp/	

KRI

Category: DS

Institution: Knight-Ridder Information Inc. (Dialog and Datastar)

Description: Recently two major information retrieval services, Dialog and Datastar, were amalgamated under Knight-Ridder Information Inc. Both offer WWW servers and access to a wide range of databases some of which provide information of relevance to environmentally sound technologies including CABI, Compendex Plus, Enviroline, Pollution Abstracts and Toxline.

Contact:	Ms. Maxine McGarvey	
Address:	Haymarket House, 1 Oxendon Street, London, SW1 4EE	Tel: +44-171-930-7646
Country:	United Kingdom	Fax:
E-mail:		
Internet:	Dialog: http://www.dialog.com/dialog/dialog1.html	

Database Servers

NTIS

Category: DS

Institution: United States National Technical Information Service

Description: The National Technical Information Service, (NTIS) an agency of the U.S. Department of Commerce, is an indispensable resource for government-sponsored information – U.S. and worldwide. The NTIS collection of scientific, technical, engineering, and business related information is made available in a variety of formats. Special emphasis is placed on information products in the high interest categories of environment, health, U.S. and international business.

Contact: Ms. Valerie Jacobs, National Technical Information Service, US Department of Commerce

Address: 5285 Port Royal Road, Springfield, VA 22161 Tel: +1-703-487-4929

Country: United States Fax: +1-703-321-4134

E-mail:

Internet: http://www.fedworld.gov/ntis/ntishome.html

Questel/Orbit

Category: DS

Institution: Questel/Orbit Inc.

Description: Questel/Orbit is a member of the France Telecom Group. It is an international on-line information company specializing in patent, trademark, scientific, chemical, business and news information serving over 20,000 professionals throughout the world.

Contact: Marketing Manager, Group France Telecom

Address: Le Capitole, 55 Avenue des Champs Pierreux, 92029 Nanterre, Cedex, Paris Tel: +33-1-4614-55-55

Country: France Fax: +33-1-4614-55-11

E-mail:

Internet: http://www.bedrock.com/patents/oqovw.html

Database Servers

STN

Category: DS

Institution: Scientific & Technical Information Network

Description: Operated cooperatively by Fachinformationszentrum (FIZ) Karlsruhe, the Chemical Abstracts Service (CAS) of the American Chemical Society (ACS), and the Japan Information Center of Science and Technology (JICST). Service Centers in Karlsruhe, Columbus and Tokyo are linked by sea cable. Thus, the users have access to one worldwide information service with over 200 up-to-date databases in science and technology. The STN centers have many years of experience in the field of scientific information.

Contact: Dr. H.J. Matner, Information Services

Address: PO Box 2465, Fachinformationszentrum Karlsruhe, D-7500, Karlsruhe

Tel: +49-7247-808-555

Country: Germany

Fax: +49-7247-808-259

E-mail: Hlpdesk@fiz-karlsruhe.de

Internet: http://www.fiz-karlsruhe.de/stn

Database Producers

CABI

Category: DP

Institution: CAB International

Description: CABI is a not-for-profit publisher, providing agricultural research information in the form of electronic databases, printed journals, books, reference works and other serial publications to the international community. Subjects covered include animal science, crop protection, forestry, natural resources, crop production, biotechnology, veterinary science and other related disciplines.

Contact: The Marketing Dept.

Address: Wallingford, Oxon, OX10 8DE

Tel: +44-1491-832111

Country: United Kingdom

Fax: +44-1491-826090

E-mail: cabi@cabi.org

Internet: http://www.cabi.org/

EI

Category: DP

Institution: Engineering Information Inc.

Description: Engineering Information (Ei) Inc. was created in 1884 to enable the community of engineers to share research results. Ei offers a wide range of information services and is accessible via the Internet. Databases which include aspects of environmental technology are the Ei Compendex* Plus database and the Ei Page One database. These databases are available on-line through the internet or on CD-ROM. Ei also publishes with Dialog a subset database on Energy and Environment on CD-ROM and maintains a directory of relevant internet resources for environmental engineers in its Environmental Engineering Village, an internet information service.

Contact: Mr. Eric Johnson, Vice President and Executive Publisher

Address: Castle Point on the Hudson, Hoboken, NJ 07030

Tel: +1-201-216-8500

Country: United States

Fax: +1-201-216-8532

E-mail: ei@ei.org

Internet: http://www.ei.org/

Database Producers

INIST

Category: DP

Institution: Institut de l'Information Scientifique et Technique

Description: INIST developed the PASCAL database which covers the world scientific and technical literature. In addition, there are specialized sub-files dealing with energy, environmental sciences (including pollution), biotechnology and agriculture.

Contact: Mr. Marc Guichard

Address: CNRS, 2 Allee du Parc de Bradois, Vadoeures-les-Nancy, Cedex

Tel: +33-83-50-46-64

Country: France

Fax: +33-83-50-46-66

E-mail: infoclient@inist.fr

Internet: http://www.inist.fr

SI

Category: DP

Institution: SilverPlatter Information Inc.

Description: Since 1985, SliverPlatter Information has played a key role in the development of a worldwide library of electronic information accessible via the Internet. A wide range of interesting databases are available through this service including AGRIS, Compendex Plus, ETDE, NTIS, Toxline, TROPAG and WATERLIT.

Contact: Marketing Director

Address: 100 River Ridge Drive, Norwood, MA 02062

Tel: +1-617-769-2599

Country: United States

Fax: +1-617-769-8763

E-mail:

Internet: http://www.silverplatter.com/

Database Producers

SSC

Category: DP

Institution: Solutions Software Corporation

Description: Innovative publisher of public-domain reference material at low-cost using state of the art search and retrieval software. SSC has published the Innovative Environmental Technology Database on CD-ROM which deals with waste management solutions developed to deal with real world situations.

Contact: Mr. Richard Dunkel

Address: 1795 Turtle Hill Road, Enterprise, Florida 32725 Tel: +1-407-321-7912

Country: United States Fax: +1-407-323-4898

E-mail: solutions@iag.net

Internet: http://www.gate.net/solutions

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APPENDICES

ICPIC
OAIC
AGRIS and CARIS
ISAT
JOIS
ICPCT
EREC and EREN
GREENTIE

Case Study 1 ICPIC

ICPIC

INTERNATIONAL CLEANER PRODUCTION INFORMATION CLEARINGHOUSE

The Cleaner Production Programme was set up in 1990 in response to a decision by the UNEP Governing Council on the need to reduce global industrial pollution and waste. Cleaner production is referenced throughout Agenda 21 as an important strategy for supporting sustainable development. It is an integrated preventative environmental strategy for processes and products to reduce risks to humans and the environment. The main elements of the Cleaner Production (CP) Programme are:

- information development and publications,
- ICPIC - the International Cleaner Production Information Clearinghouse,
- National Cleaner Production Centres (NCPC),
- demonstration projects, and
- efforts to strengthen environmental protection programmes in industry and government.

Fostering technology transfer under CP is difficult because there is no legally binding international agreement, creating the demand for technology transfer and no special financial mechanism to provide support for either national programmes or technology implementation. Consequently, CP has embarked on a strategy emphasizing information exchange to develop awareness of the benefits of cleaner production and efforts to catalyze the work of others to support implementation.

Key to successful implementation of this strategy is the existence of an effective information dissemination system producing relevant and timely information, and ICPIC was developed with this need in mind.

Organization

Originally designed by the United States Environmental Protection Agency, ICPIC was donated to UNEP in 1989. The original on-line system consisted of a bulletin board based system, accessible via modem and contained case studies, publication abstracts, and listings of experts. After qualitative and quantitative reviews in 1994, ICPIC was taken off-line largely because of the limited number of users (500 over a three year period). A new dissemination mechanism was then developed which better incorporates the needs of the targeted users, coming generally from developing countries or countries with economies in transition. This mechanism includes a diskette version of the database, an e-mail address for queries, World Wide Web connection via Internet (*http://www.unepie.org/*) and the provision of additional hard copy publications.

UNEP IE in Paris is administratively responsible for ICPIC. An Expert Advisory Group assists UNEP in guiding CP activities. Cleaner Production Working Groups play an important role in the collection of information as well as for its dissemination. They cover leather tanning, textile, metal finishing, pulp and paper, biotechnology, education, policy strategy and instruments, and sustainable product development. In future ICPIC will also collect information and receive feed-back from the six National Cleaner Production Centres (NCPCs) jointly established by UNEP and UNIDO.

ICPIC costs approximately $100,000 per year (1995 figures) including the cost of one full-time staff person, the new diskette development and the cost of one support staff person for six months at half-time. An additional, $50,000 is allocated in order to update the diskette twice per year, to disseminate hard copy publications and to cover additional staff costs.

Information Contained

ICPIC is an on-line electronic information system which contains:

Case studies: There are 277 case studies contributed from 30 countries as well as from other institutions such as the EP3 programme and UN sources. They cover cleaner production applications from around the world, representing a spectrum of industrial sectors (Box A1).

Each case study includes a description of the cleaner production application, economic benefits derived and contacts for more information. Of these case studies, 255 can be categorized as follows:

14.5% chemical industry, 4.3% leather industry, 12.9% textile industry, 4.7% pulp and paper industry, 27.5% metal industry, 5.8% electronic industry, 7% food processing industry, 5.8% transportation industry, 2.7% construction industry, 1.9% energy sector, 1.1% service industry, 12.5% light industry and 7.4 % other.

Moreover, a variety of cleaner production applications are demonstrated in the case studies:

39 treat new technologies
48 treat recycling
48 treat process modification
33 treat metal substitution
24 treat good housekeeping
2 treat product re-design
83 treat combined CP applications

- *Publications:* 584 publication abstracts from 30 different countries are provided. These include abstracts of technical reports, handbooks, train-

ing materials and policy documents. Each contains contact information and references on how to obtain a copy of the document.

- *Expert Institutions:* A collection of 116 organizations that have cleaner production expertise can be found in this category. Each entry contains contact information as well as a brief description of the organizations' work with cleaner production.

Box A1: Case Study from ICPIC

1. **Headline:** Good housekeeping results in savings in a company that produces paint and varnish.

2. **Background:**
   HIKO Byggplast AS produces mainly water soluble epoxy products to coat concrete. The production process is relatively simple, and the company has no major environmental problems. It was decided to look for solutions to minimize the amount of incoming packaging and to find substitutes for the current amine- and amid-hardeners.

3. **Cleaner Production Principle:** Good housekeeping, material substitution

4. **Description of Cleaner Production Application:**
   The cleaner production applications follow:
   - Recycling of incoming raw material packaging like steel barrels, plastic barrels, once-use pallets, corrugated cardboard, paper bags, shrink plastic (PE) and transition to storage of raw materials in tanks;
   - More environmentally harmless hardeners to the epoxy-systems; and
   - Source-sorting of office waste.

   Raw material, liquid and dry powder are weighed in large vessels on wheels. For products that float, the next step is to mix them in a dissolver. The product is then packaged and ready for sale. Fillers undergo a similar process, but they utilize a kneading machine for the mixing. Hardeners are delivered in the same condition in which they are delivered from the producer/supplier, though eventually the viscosity is adjusted.
   Overall the production produces very little waste and emissions. There are no effluents to the water from the production. The main environmental problems arose from the incoming packaging which amounted to about 32 tons, and from the amine- and amid-hardeners to epoxy.
   The company has 12 employees and had a turnover of 19,2 mil NOK in 1991.
   In terms of the cleaner production project, the following steps were implemented: the recycling of the steel barrels; transition to tank supplies for some of the raw materials; the company works on an on-going basis to find new and less environmental harmful epoxy hardeners, and source-sorting of office waste has started.
   There is no need for new cleaner production "technologies."
   Efforts were spent to find less environmental harmful hardeners to the epoxy-systems.
   Specific packaging changes include the reduction of: steel barrels by 23 tons, corrugated cardboard by 1 ton, and office waste has been reduced by 1 ton.

5. **Economics:** The operational costs will be reduced by about 30,000 to 50,000 NOK.

6. **Advantages**: See Description of Cleaner Production Application.

7. **Constraints:** See Description of Cleaner Production Application.

8. **Contacts:**
   HIKO Byggplast AS, Att: Manager Henrik Andreassen Skredderveien 6, 1500 MOSS, Norway
   Oestfold Research Foundation, Att: Arild Olsen, PO Box 276, N-1601 Fredrikstad, Norway
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   TEL: +47-22-573400

9. **Keywords:** Norway, paint, good housekeeping, material substitution, packaging, epoxy, steel barrels, coating, ISIC 3521.

10. **Reviewer's Comments:** This case study was translated from Norwegian and submitted to UNEP IE on behalf of the Norwegian State Pollution Control Authority by Stiftelsen Ostfoldforskning in February 1994. It was reviewed and edited by UNEP IE in July 1995. It has not undergone a formal technical review.

- *Industry and Environment Sources:* This section of ICPIC contains relevant information regarding the Cleaner Production Programme as well as other activities of the UNEP Industry and Environment Office:
- General information on Cleaner Production and UNEP IE's Cleaner Production programme;
- List and contact information for NCPCs;
- List of UNEP IE CP Working Groups;
- Quarterly CP Programme activity reports;
- List of Publications and Order forms;
- List of UNEP IE Cleaner Production Network Contacts.

Information Collection

Currently, ICPIC information is collected through a variety of sources and does not follow a prescribed path or network. Some of the information stored in ICPIC is collected by the CP team while carrying out other activities. The many partners of the Cleaner Production Programme, particularly its working group members, also provide relevant information. User input to guide the information programme is obtained from the expert working groups, from participation in workshops, seminars, and conferences, response sheets contained in all publications and from the direct input to the on-line system. Before data is entered into the system, it is reviewed by the CP team for accuracy and completeness. In the future, as the NCPCs become more active, they will be systematically queried for information to enter into ICPIC.

ICPIC is not a repository of all existing information on cleaner production available internationally. Instead, it focuses on dissemination of selected pieces of information available within the programme in order to advance understanding of the CP philosophy, process and technologies involved, as well as provide the user with contact persons from whom they can obtain more specific information.

Accessibility and Costs

The newest version of the ICPIC diskette became available from March 1996. An evaluation sheet is provided with each diskette and users will be invited to provide their comments. An "introductory cleaner production package" containing various documents and the diskette is available upon request. Charge for the packages is $100, whereas some parties (e.g. persons from developing countries) receive the package at no cost.

Future Plans

UNEP IE has created a WWW Site which provides easier access to ICPIC. It should also provide greater opportunity for networking activities to be pursued including electronic links to other homepages dealing with cleaner production.

Lessons Learned

During a three year period of operation (1989-1993) ICPIC had 500 registered users. This initial experience with ICPIC has made it clear that it is not sufficient to rely primarily on an on-line electronic database for information dissemination. While this medium is suitable for some users, it needs to be supplemented with information transmitted in both diskette and paper form and by a query response service to help answer specific questions.

In terms of the information contained in the database, the case studies, bibliographic data and expert list have been judged to be very valuable by users when they provide performance, cost information and contacts for follow up.

Experience has shown that quality control of the information is a very important function that needs more emphasis. A database can easily become overloaded with marginally useful information. Moreover, data input, formatting, editing, and collection demands a significant amount of human and financial resources. There are also substantial resource requirements for updating and maintenance of the database. If maintenance and updating are not carried out frequently, the database can quickly become difficult to use and out of date.

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OAIC

OZONACTION INFORMATION CLEARINGHOUSE

The Parties to the Montreal Protocol on Substances that Deplète the Ozone Layer established a Multilateral Fund to provide technical and financial support to assist developing countries in complying with the Protocol's measures to phase out a very specific group of controlled ozone depleting substances (ODS) .

Developing countries eligible for assistance under the Fund (referred to as "Article 5 countries") require financial support to meet agreed incremental costs of their ODS phase out, as well as information and technical assistance to help them in identifying, evaluating, selecting and implementing ESTs that replace or eliminate ODSs. Recognizing this, the Parties included in the Montreal Protocol itself a legal mandate that the Multilateral Fund shall establish a clearinghouse function to assist Article 5 countries through:

- specific studies and technical cooperation,
- identifying their needs for cooperation;
- facilitating technical cooperation to meet the identified needs;
- distributing information and relevant materials;
- holding workshops, training sessions, and other related activities; and
- facilitating/monitoring other multilateral, regional and bilateral cooperation.

Organization

Of the four agencies that have been designated to implement the Fund (UNEP, UNDP, UNIDO, and World Bank), UNEP has been mandated to provide this clearinghouse function, which is accomplished through UNEP IE's OzonAction Programme located in Paris, France. Launched in mid-1991, the Programme includes two major components: the Clearinghouse and Country Programmes/Institutional Strengthening Projects. The clearinghouse is itself comprised of:

- Information Exchange (comprising a query response service, a quarterly newsletter, a diskette reference tool and technical publications such as technology sourcebooks and case studies) also known as the "OzonAction Information Clearinghouse" or "OAIC";
- Regional and National Training Courses and Workshops; and
- Regional Networks of Government ODS Officers.

For the purposes of this case study, only the information exchange activities are addressed, however it is important to note that all three activities are inter-related and support each other on a daily basis. All of the above activities are financially supported entirely by the Multilateral Fund (and in a few specific cases, bilateral contributions).

These activities follow the specific technological guidance of the UNEP Technology and Economic Assessment Panel (TEAP) and its related Technical Options Committees (TOCs). The TEAP/TOCs are panels of international experts from industry, government, academia, and NGOs that have been established under the Protocol to regularly assess the implementation progress of ODS control measures worldwide both in terms of technology and economics. The OzonAction Programme relies heavily on the guidance of TEAP/TOC for the identification and assessment of ESTs, and consults those experts regularly concerning the design, content and delivery of technology-related information services. The TEAP/TOC members also provide a crucial quality review function for information that is compiled or developed by the OzonAction Programme.

Role of the Clearinghouse in Technology Transfer

A major role of the OzonAction Programme is to facilitate transfer of "ozone-friendly" ESTs to Article 5 countries through its clearinghouse function. The programme does not itself engage in technology transfer, rather it provides or points to the initial technical or policy information/ contacts necessary to stimulate action on the part of companies and governments. The actual transfer of technology occurs through direct company to company linkages (sometimes with involvement of governments or research institutes).

Through regular assessment of user needs the OzonAction Programme has categorized the steps through which Article 5 countries must pass in the EST transfer process. These have been organized in a "Hierarchy of Information Needs of Developing Countries" as follows:

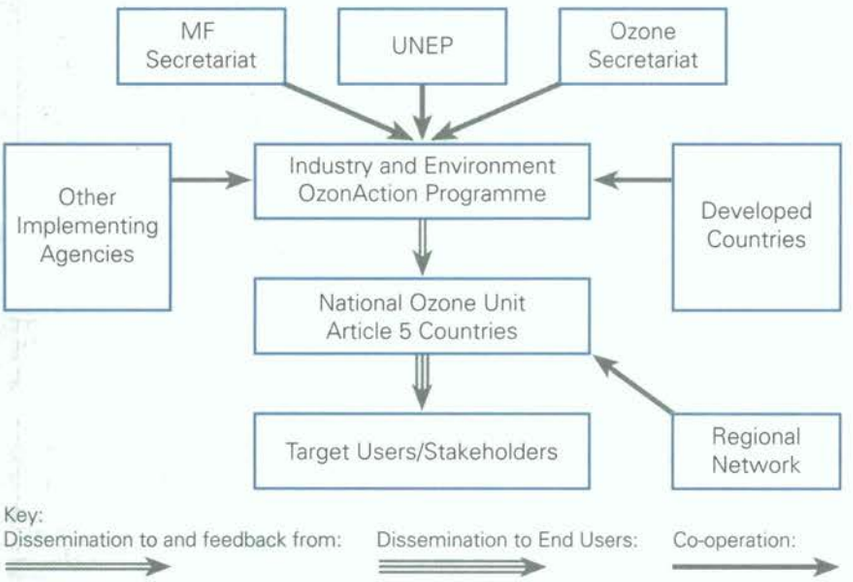
- awareness of the need to comply with the Montreal Protocol and to develop national ODS phase-out strategies (which invariably includes technology transfer elements);
- understanding what technical options are available to reduce or eliminate ODS;
- identification of worldwide sources of technologies, equipment, and chemicals required to phase-out ODS; and
- guidance on how to implement selected ESTs at the enterprise level.

The OAIC has designed elements to address each of these steps.

Flow of Information

The flow of information within the OAIC is shown in Figure A2.1. The OAIC collects information about ESTs worldwide, primarily from industry, industrial associations, and governments. Collection is carried out by

Figure A2.1: Flow of Information in the OAIC



direct contacts with information sources, and indirectly through networks of TEAP/TOC experts and literature searches/review. Information is obtained largely from countries which already have experience with the phase-out of ODS (especially developed countries).

OAIC disseminates information directly to target groups. It also disseminates information indirectly by regularly providing information to industrial associations for them to convey to their member companies. The regional networks of ODS officers also provide important links to industry in each of their countries. Starting with South East Asia and Pacific countries, and spreading to Latin America and Africa, regional networks of ODS officers have been established who meet regularly and share their experiences. These focal points disseminate information to industry and other relevant actors within their own countries. Furthermore, by regularly exchanging information and publications with other similar national or regional clearinghouses, a multiplier effect is achieved.

Information Contained

OAIC is an integrated information exchange service providing technical, policy and scientific information on a wide range of ODS phase-out issues including:

- general awareness material, which includes an information kit, national campaign handbook, video and poster;
- descriptions of, and worldwide sourcing information for, "ozone friendly" ESTs, equipment and chemicals for each industrial use sector;
- international directory of experts and consultants who can assist with the EST transfer process;
- technical literature abstracts and information for ordering documents;
- descriptions of national and corporate policies and programmes to phase-out ODS;
- listings of workshops, conferences and meetings concerning ozone depletion issues; and
- bulletins containing news on phase-out initiatives.

Accessibility and Costs

OAIC services are available free of cost to all Article 5 countries, and most are specifically designed for the National Ozone Units (government officers responsible for National Ozone Protection Programmes and Policies and industrial associations). There are currently approximately 140 developing countries which are serviced by the OAIC.

Some OAIC services are provided at cost to developed countries. All of the information types described above are accessible through a range of dissemination methods, including a query response service (available to through telephone, fax, email, and mail) and hard copy publications:

- the OzonAction newsletter (sent to approximately 18,000 persons in five languages) contains inter alia information about new technologies and products;
- four Technology Sourcebooks provide guidance on how to select and evaluate a non-ODS EST, and identify worldwide suppliers of the related ESTs, equipment and chemicals;
- more than 200 sectoral case studies describing successful conversions to "ozone friendly" ESTs, equipment, and chemicals; and
- 20 information papers on key aspects of ESTs (as well as policy issues).

The OAIC Diskette Version (OAIC-DV), a data base reference tool is updated twice a year and provided to over 500 key target users. The diskette requires an IBM-PC compatible using DOS 3.3 or later versions, with 3 MB of free space on the hard drive, a 3.5 floppy disk drive, and 1 MB of RAM. More details of the information contained are shown in Table A2.1 which outlines the contents of the OAIC-DV 3.0 diskette. Presently, OAIC-DV is available on USEPA's Stratospheric Protection Homepage on the World Wide Web, and UNEP is in the process of creating its own homepage for the clearinghouse.

Table A2.1: Contents of OzonAction Information Clearinghouse Diskette Version 3.0 (OAIC-DV)

Description	New information added for this version	Total files on OAIC-D 3.0
Abstracts of technical and policy publications (conference papers/proceedings, monographs, technical reports, policy papers and journals)	Updated with 20 new abstracts	779 abstracts
Status of Ratification of the Vienna Convention, Montreal Protocol, London and Copenhagen Amendments	This is a new feature(as of April 1995)	21 files
Contact lists for developing countries (National Ozone Units and other ozone protection focal points, industry associations, training institutes, NGOs) and developed countries (ozone protection focal points)	Updated (as of June - September 1995)	
Summaries of ozone protection **legislation and regulations** worldwide	Updated (as of June 1995)	
Summaries of **ozone protection activities in international organizations, NGOs**, and research institutes, including policies, programmes, and projects.	No new additions	8 files
Summaries of **ozone protection activities in industry associations and individual companies**, including corporate policies, programmes, and projects.	11 new descriptions	44 files
The entire text of the Multilateral Fund Secretariat's **Inventory of Approved Projects**	This is a new data base(as of December 1994)	814 files
Descriptions and ordering information for **sources of additional information related to specific sectors**, including: -UNEP IE's Sectoral Technical Brochure series -UNEP IE's Sourcebooks of Technology for Protecting the Ozone Layer series -USEPA/ICOLP solvent manual series -On-line and diskette data bases related to ozone protection -Ozone Protection Videos	Updated (as of February - August 1995)	53 files
Descriptions and ordering information for **policy guidelines for National Ozone Units and small and medium-sized enterprises** produced by UNEP IE.	Updated (as of June 1995)	
Contact lists for the **members of UNEP Assessment Panels** (Technical and Economic, Environmental Effects) and **UNEP Technical Options Committees** (aerosols, foams, halons, methyl bromide, refrigeration, solvents)	Updated (as of June 1995)	
Sectoral recommendations from the World Bank's Ozone Operations Resource Group (OORG)	Updated(as of August 1995)	
The Executive Summary of the **1994 Technology and Economic Assessment Panel report**	No new additions	
Descriptions of **halon bank management programmes worldwide and information about halon recycling, bank management and trade** excerpted from the 1994 Halon TOC report	These are new features (as of July 1995)	

Description	New information added for this version	Total files on OAIC-D 3.0
Worldwide **contact list for producers of controlled ODS and alternative substances** *	Updated (as of July 1995)	
Glossaries of Montreal Protocol terminology in various languages, including: -English-French (Anglais-Francais) -French-English (Francais-Anglais) -English-Spanish (Ingles-Espanol) -Spanish-English (Espanol-Ingles)	These are new features (as of July 1995)	
Description of **services available to developing countries from the Multilateral Fund Secretariat and Implementing Agencies** (UNDP, UNEP, UNIDO, World Bank) **	Updated (as of July 1995)	33 files
Description of UNEP IE's International Recycled Halon Bank Management Information Clearinghouse **	No new additions	
Lists of publications and fact sheets produced and/or distributed by Implementing Agencies	Updated(as of January 1995)	
The full text of the Multilateral Fund Secretariat's **Policies, Procedures, Guidelines and Criteria** document (as of December 1994)	Updated(March 1995 addendum)	
Information on the **Programme for Alternative Fluorocarbon Toxicity Testing (PAFT)**, including summaries of toxicology research results for HFC-134a, HCFC-123, HFC-125, HCFC-124, HCFC-141b.	No new additions	5 files
Information on the **Alternative Fluorocarbon Environmental Acceptability Study** (AFEAS)	updated(as of November 1993)	1 file
Chemical property data sheets for CFC-11, CFC-12, CFC-22, CFC-112, CFC-113, CFC-114, halon-1301, halon-2001, 1,1,1-trichloroethane, and methyl bromide, compiled by the Canadian Centre for Occupational Health and Safety	No new additions	11 data sheets
Contacts for persons claiming expertise related to ODS phase-out who have completed UNEP IE's OAIC Contact Data Base form	10 new names; 20 updates	287 contacts
Data sheets excerpted from UNEP IE's Sourebooks of Technologies for Protecting the Ozone Layer that list **worldwide suppliers of technology, equipment and chemicals for specific sectors**: -Aerosols, sterilants, carbon tetrachloride and miscellaneous uses -Flexible and rigid foams -Specialized solvent uses -Refrigeration, air-conditioning and heat pumps (entire document included)	Foams and Refrigeration source books are new features	124 data sheets plus entire text of Refrigeration source book
The full-text searchable version of the Official Montreal Protocol Handbook on-line user guide for understanding and using the OAIC-DV	Latest version available(August 1993), Updated(as of August 1995)	Entire text of the handbook Entire text of the user guide

User Needs Assessment

Given the changing nature of international and national ODS control measures, the rapid development of alternative technologies, and the evolution of Article 5 countries needs and capabilities, the OzonAction Programme has established regular feedback mechanisms which it uses to evaluate the effectiveness and appropriateness of its clearinghouse activities, and adjust them as necessary. The Programme carefully assesses target user needs to identify what types of information is required, what format and how it should be delivered. This needs assessment is accomplished through a combination of formal and informal means as described below.

- Feedback about the information needs of a major OAIC target group - government ODS officers - is routinely collected through the Regional Networks.
- An annual meeting convened by UNEP to specifically solicit input into the design and content of the OzonAction Pro-gramme, including the OAIC. This group comprises developing and developed countries, industry representatives, TEAP/TOC members, other implementing agencies and the Multilateral Fund Secretariat.
- Round table discussions of small groups of experts knowledgeable in information exchange are organised in order to review the progress of OAIC, discuss the information exchange needs of developing countries, and develop recommendations to improve clearinghouse operation.
- A yearly round table discussion on knowledge sharing networks held in conjunction with the International CFC and Halons Alter-natives Conference in Washington, DC. Representatives include industry and government from developed and developing countries, NGOs, the Multilateral Fund Secretariat and the other implementing agencies. The objectives are to exchange views on barriers that exist to technology transfer, the information needs of developing countries, and possible solutions to promote technology transfer through information exchange.
- A series of regional workshops have been held to provide developing country decision- makers in government and industry with the latest information about damage to the ozone layer, technical alternatives to ODS, and policies and strategies for phase-out. Participant evaluation reports from these workshops provide a useful source of information on user needs.
- Surveys are undertaken specifically to ascertain the opinions and information needs of the recipients of OAIC services. Surveys have been distributed with the OzonAction Newsletter, and each technical document/OAIC-DV is accompanied by an evaluation questionnaire. While these surveys and questionnaires do not provide rigorous statistical confidence, they are a useful source of reader feedback.

In summary, the OzonAction Programme has sought and received regular feedback from its target users through a combination of mechanisms. The collection and evaluation of this feedback by both formal and informal means will continue to be a priority activity.

Lessons Learned

The process established under the OzonAction Programme to facilitate technology transfer addresses most of the steps required for an effective information clearinghouse function. A number of important lessons can be drawn from this experience:

- An information clearinghouse which has been established under a financial mechanism of a legally-binding agreement (e.g. the Montreal Protocol) is extremely useful, to ensure successful technology transfer. It would be advantageous if that agreement contains a specific written mandate that clearly identifies the need for, and activities included in, a clearinghouse function.
- In order to be successful, a clearinghouse must ensure the support of both developed and developing countries in the collection and dissemination of information about ESTs. Cooperation, strategic partnerships, and joint projects can help achieve this end. Additionally, the fact that a clearinghouse function is embedded in a legal agreement considerably helps to ensure that such cooperation takes place.
- Well-defined target groups (e.g. National Ozone Units and select industrial associations) and very specific issues to be addressed (i.e. the phase out of production and consumption of ODS controlled under the Protocol) are crucial for the success of a clearinghouse.
- It is essential that target users' needs be regularly assessed through established feedback mechanisms, and that those needs be classified in a rational scheme (e.g. a "Hierarchy of Needs") to ensure effective results of clearinghouse services.
- Guidance from an independent technology assessment panel is invaluable for designing and quality-reviewing updated and "neutral" EST information services provided by a clearinghouse.
- In order for actual technology transfer to take place, technical information about ESTs needs to be supple-

mented by guidance on the assessment of technologies. The clearing-house function alone cannot ensure that the transfer of ESTs takes place under fair and most favorable manner. Capacity building is needed in key stakeholders to assist in assessment of ESTs before their selection, and adaptation of ESTs after the selection process. The "training element" should seek to turn "information" into the "practical transfer of technology."

While it is still too early to draw final conclusions about its effectiveness, the OzonAction Programme has set the foundation for facilitating technology transfer. This is an important programme to continue to monitor as it may serve as an effective model of assisting transfer of ESTs that could be replicated elsewhere.

Future Plans

With respect to the content of the OAIC, case studies of successful phase-outs of ODS will continue to be collected, as will information about new ESTs and their sources. The phase-out of CFC and halons has already taken place in developed countries and consequently the transfer of this experience to developing countries will be key to the cost-effective phase-out of ODS worldwide.

Concerning the operation of the system, plans are afoot to make it more user friendly with the OAIC diskette to be made compatible with "Windows" to ensure improved accessibility of databases.

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AGRIS and CARIS

AGRICULTURAL SCIENCES AND TECHNOLOGY (AGRIS) & CURRENT AGRICULTURAL RESEARCH INFORMATION SYSTEM (CARIS)

This case study presents details of two closely related information systems set up in 1975 by Food and Agriculture Organization (FAO) of the United Nations. These are the International Information System for the Agricultural Sciences and Technology (AGRIS) and the Current Agricultural Research Information System (CARIS). The former provides an extensive range of literature references related to all aspects of agriculture while the latter catalogues agricultural research projects being carried out in, or on behalf of, developing countries. The primary intent of CARIS is to make people aware of current research activities and to provide them with the information to get directly in touch with relevant researchers. This enables the transfer of technical information and the reduction of duplicated research efforts. Both information systems are global cooperative databases in which participating countries input data produced within their boundaries and, in return, draw on the information provided by the other participants.

Organization

The AGRIS and CARIS networks are globally spread and consist of 171 and 137 participating centres respectively, the AGRIS/CARIS Coordinating Centre at FAO Headquarters in Rome (Italy), and an AGRIS Processing Unit at the International Atomic Energy Agency (IAEA) in Vienna (Austria). Each participating country, regional and international institution has a designated input centre that prepares and coordinates input to the databases and provides AGRIS/CARIS services for their own country or region. The size and structure varies from one centre to another.

The Coordinating Centre, which is part of FAO's Library and Documentation Systems Division, has the overall responsibility. It handles the general management, coordination, general administration, and training. In addition it processes the input from the participating centres. There are five staff members. The AGRIS Processing Unit has ten staff and handles data input, data processing and preparation of output products. In addition, it is responsible for software development. Main decisions concerning AGRIS and CARIS are made during Technical Consultations being held every two years. The Consultations are open to all participating centre with each centre sending one voting delegate.

FAO is a non-profit organization and the information services are provided free of charge to participating centres. The participating centres take care of data input and provide, mostly for free, services to others. As the information systems are extensive, with participating centre being responsible for its own finances, it is impossible to calculate total expenditure and there are no financial statistics available. For the Coordinating Centre and Processing Unit all financial support comes from the FAO program budget. The Coordinating Centre has an annual total budget of approximately US $3.6 million: with training and travel about US $0.7 million and publications US $0.25 million. The annual budget for the Processing Unit's is US $1.0 million. This covers computer processing, data checks and output tapes.

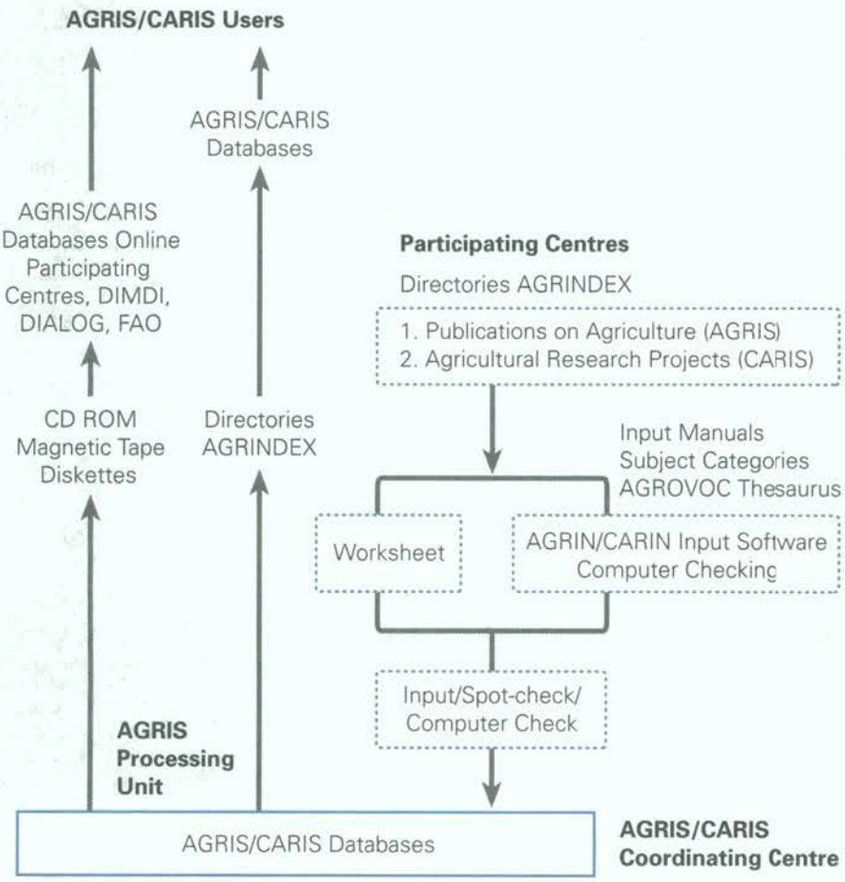
Participating centres sometimes receive support from FAO projects to help with development of national information infrastructures. In addition, some other organizations have contributed money for special projects at national AGRIS and CARIS centres. The extent of these contributions has varied considerably over time.

Information Flow

Figure A3.1 provides an overview of the information flow in two systems. For AGRIS there are 146 national, 15 international and 10 regional centres are participating world-wide. For CARIS there are 121 national, and 16 regional and international centres. Input is also received through the regional centres in nine countries not participating directly in AGRIS and for six countries in relation to CARIS.

To ensure that data attain the degree of accuracy and consistency required, the same standards and procedures must be applied by all individuals participating in data input. For this purpose, standards and procedures are described in a series of manuals which are currently being updated. The participating centres prepare the input on either paper worksheets or with the Micro CDS/ISIS software applications called AGRIN and CARIN. Both systems run on IBM PC XT or AT or compatible, with DOS version 3.0 or higher. Input is categorized by Subject Categories. There are 17 categories with each one broken down into from 2 to 17 sub-categories. Keywords are also used from the AGROVOC multilingual thesaurus which was developed in order to provide controlled indexing terms for the AGRIS database. It comprises 14,714 terms (called descriptors) and 8,495, 11,048, and 7,602 non-descriptors in the English, Spanish and French versions respectively. The thesaurus is maintained by staff at the Coordinating Centre; its electronic ver-

Figure A3.1: Overview of Information Flow for AGRIS/CARIS



sion is kept on the computer system at Processing Unit.

For AGRIS, the electronic input is locally checked with the help of an Input Checking Program on CDS/ISIS; the checking comprises several formal and bibliographic aspects including AGROVOC descriptors, correct use of codes, correct formatting of records so as to ensure that all required fields are completed. After local checking the input is sent to the Processing Unit: mainly on diskettes from centres using the AGRIN/CARIN software, on magnetic tape, via the Internet, and still a small portion on paper worksheets.

In the Coordinating Centre, the input from all participating centres is checked by computer on proper indexing and subject categorization. Furthermore, data from new participating centres is thoroughly checked "by hand". References and project descriptions that are marked as incorrect are returned to the participating centre concerned. After correction, these references are resent to the Coordinating Centre.

The final versions are then incorporated in the main AGRIS and CARIS databases, which reside on the mainframe computer. At present, the Processing Unit is preparing a conversion of the system to a client/server architecture. Most likely the server will be an IBM RISC machine operated by UNIX with SYBASE as the database management software. Regularly the Processing Unit processes the newly entered data to prepare several output products: a quarterly CD-ROM and a monthly magnetic tape. These products are automatically distributed free of charge to participating centres which have requested for them.

The entire AGRIS database is published and distributed by the company SilverPlatter on CD-ROM. Each quarter a new CD-ROM with the accumulated data of the past two to three years is produced. The CD-ROM is presently the most common way of distributing the database. The software being used is SilverPlatter's SPIRS and WINSPIRS, which are commercial products and operate on DOS, Windows and Macintosh computers. The DOS version can operate on rather low-end machines, such as a 286, with 4MB of RAM. The Windows version requires at least a 386 machine with 8 MB RAM.

Also several subsets of the database have been published on CD-ROM (food & human nutrition, fisheries) or are in preparation for CD-ROM production (forestry). The food & human nutrition disc has been produced by FAO and SilverPlatter together. The fisheries and forestry discs will be produced by FAO only and uses HEURISKO software, the search interface for CDS/ISIS applications developed by UNESCO. Updates of the database are also distributed monthly via magnetic tape with retrospective data, to AGRIS centres that wish to load the data onto their own national or other cooperative information systems.

With regard to CARIS, a participating centre indicates that a project has been completed by both the project termination date and a special code. Once a year, completed projects are deleted from the current CARIS database and moved to an archive file. On request the Coordinating Centre processes the current CARIS database to distribute diskettes and magnetic tapes to participating centres. Furthermore, over the years various printed national and regional directories have been produced and sent to participating cen-

tres, also on request. In 1994, a CD-ROM of the CARIS database was produced by FAO. It contains 26,694 descriptions on research projects, being entered in CARIS till 1993. It uses HEURISKO software. The CD-ROM requires a personal computer with 286 or a more powerful processor, 640 K RAM, and MS-DOS version 3.1 or higher.

Accessibility and Costs

The AGRIS database is distributed via CD-ROM and via magnetic tape to its participating centres. All participating centres are access points for the information system: the database can be searched by anyone at one of the participating centres. The main users are librarians, researchers, students in agriculturally related disciplines, and workers in various governmental agencies around the world. The database is also available on-line. The entire database back to 1975 is available through the on-line services at several participating centres, at Dialog Information Services and at DIMDI. The IAEA provides on-line access to the last 6 months of the database which is not yet published on CD-ROM.

The CARIS database is distributed on diskette, via magnetic tape or via CD-ROM to its participating centres. Likewise, all participating centres are access points for the information system. The research focus of the database means that the main users are agricultural researchers, research administrators, faculty, students, government officials and donor organizations. The most commonly sought information is the place where research on a particular subject is currently being undertaken. The database is also available on-line from FAO or some participating centres.

Primarily, the services of AGRIS and CARIS are provided free of charge. The CD-ROMs, magnetic tapes and directories are installed on computers and/or placed in libraries of the participating centres for general use at no cost. However, a fee is charged for accessing AGRIS on-line through Dialog Information Services, IAEA, and DIMDI. Several participating centres offer SDI services. The costs varies per centre.

Institutions not participating in AGRIS can subscribe to the CD-ROM's from SilverPlatter. The AGRIS CD-ROM set from SilverPlatter costs US $2.035; it comprises the current disc and 5 archival discs which go back to 1975. The price for an annual subscription for quarterly updates is US $825. The food & human nutrition disc costs US $750. There is a 50% discount for orders received from developing countries. The result of searching the database or of SDI services are references to certain publications. The original publications may be present in the library of the participating centre where the database search was undertaken. If not, the library can request copies of the original publications from national or regional library systems, or from AGLINET member libraries.

AGLINET is a cooperative network of agricultural libraries. General agricultural libraries with strong regional/country coverage and specialized subject resource collections around the world have agreed to participate in AGLINET whereby all member libraries provide, upon request, speedy inter-library loan and photocopy service to other member libraries normally without charge. AGLINET Centres are only asked to provide literature originating in the country, region or specialization concerned. A final option to obtain the original publication is the FAO library in Rome. For non-conventional literature that is generally not available through the normal commercial sources, the national and international AGRIS centres are asked to maintain copies and to provide them on request. Each participating library sets its own prices for these services.

Additional Support to Participating Centres

Besides the database, on either CD-ROM or magnetic tape, participating centres may receive additional support including the training of staff; training in document selection, bibliographic description, indexing, subject analysis, and information retrieval. Training may be done by Coordinating Centre staff, by consultants, or by other members of national or regional centres. In addition, FAO will sometimes assist a centre in a developing country with project money to fund the acquisition of computer equipment.

Information Contained

The AGRIS database, covering 1975 to the present, has accumulated 2.3 million bibliographic references and is increasing at the rate of approximately 11,000 items a month. It contains references to both published and non-conventional documents. The database consists of journal articles (75%), monographs (18%), conference papers (6%), and other (1%); 21% of the references include abstracts. References are in the original language with an English translation of the title. Each bibliographic reference contains title, authors, the journal or volume in which the reference appeared, date, page numbers, allied bibliographical data, together with an indication of how it can be obtained or where it can be consulted. All records are arranged by the primary Subject Category and indexed completely. The database can be searched for any word or combination of words which appears in any field of the reference or in a specific

field of the reference (e.g. descriptors, title).

Currently, the CARIS database contains 15,000 to 18,000 currently active projects. The CD-ROM, produced in 1994, contains 26,994 projects. A project description consists of project title, objectives, its starting and termination dates and duration. It also includes the address of the institution where the research is being carried out, and the names and specialities of researchers. Furthermore, the project is categorized in terms of the Subject Categories and the thesaurus AGROVOC. The system records data in English, French or Spanish.

Both AGRIS and CARIS cover all aspects of agriculture and the broad the breakdown of input by category is shown in Table A3.1.

A subset of the AGRIS database (January 1993 - May 1995, 307,218 records) was searched on the coverage of Environmentally Sound Technology/ies (EST). Firstly, a search was undertaken with the key words "environment* sound technolog*" (*=any character). Seven references (=0.002 % of subset of database searched) were identified; 6 of which are positively covering ESTs. Secondly, a slightly broader search was undertaken with the words "environment* NEAR sound AND technolog*". This time 20 references (0.007% of subset of database searched) were selected; 7 of which were already identified in the first search. Of the 13 "new" references 8 of them clearly comprised ESTs.

The AGROVOC thesaurus was also examined on (combinations of) descriptors that could cover ESTs. Many possibilities were found, among others "environmental-protection" and "technology". The database field "descriptors" was searched on a combination of both terms and 204 records were found (= 0.07% of subset of database searched). Although not all records may clearly cover ESTs, many records do: 75 references clearly covering ESTs were easily selected (=0.03% of subset of database searched), probably more records also comprise ESTs.

The CARIS database on CD-ROM (with 26,694 records) was searched on the coverage of Environmentally Sound Technology/ies (EST). Firstly, a search was undertaken with the key words "environment* sound technolog*" (*=any character). No records were found. Secondly, a broader search was undertaken: "environ* AND technolog*". This search resulted in 43 records. After analyzing these records it proved that most of them have nothing to do with ESTs: most records found cover research on the improvement of the growing environment of agricultural plants. However, 8 project descriptions refer to research projects that may result in information on ESTs (=0.03% of CD-ROM searched).

In CARIS, the AGROVOC descriptors are always stored in English. However, the project descriptions are entered in either English, French or Spanish. While searching the database this has to be taken into account.

Although AGRIS and CARIS may not have been designed with ESTs in mind, references covering ESTs are present and it is quite easy to find at least a number of them by searching the databases with combinations of existing AGROVOC descriptors. However, it will be a laborious task to find all records that comprise ESTs and it is unclear how many references on ESTs are actually present. The searching for ESTs could be easily optimized by introducing the descriptor "environmentally sound technology" in the AGROVOC thesaurus.

Future Plans

In the future, FAO will continue to

Table A3.1: Breakdown of AGRIS and CARIS input, from 1991 - 1993, by broad Subject Category

Broad Categories	% in AGRIS	% in CARIS
A. Agriculture in general	0.7	-
B. Geography and history	0.8	-
C. Education, extension and information	1.6	0.6
D. Administration and legislation	1.8	-
E. Economics, development and rural sociology	12.1	4.4
F. Plant science and production	29.6	45.6
H. Plant protection	15.4	15.1
J. Postharvest technology	1.8	1.9
K. Forestry	5.3	3.9
L. Animal science, production and protection	21.8	10.5
M. Fisheries and aquaculture	2.4	3.4
N. Agricultural machinery and engineering	2.6	1.7
P. Natural resources and environment	10.4	6.5
Q. Processing of agricultural products	11.5	5.2
S. Human nutrition	3.4	0.3
T. Pollution	3.8	0.5
U. Methodology	2.7	-

work on improving the coverage of the literature from country to country and will look at new ways to provide access to non-conventional literature. Furthermore, FAO plans to take more advantage of the increasing availability and capabilities of microcomputers, CD-ROM equipment, and Internet connections in order to improve both the submission of input data and access to the databases.

Lessons Learned

The extensive structures of both information systems have both advantages and disadvantages. Because references to agriculturally related documents are collected within the countries in which they are published, the databases contain much information that is not cited in any other indexing or cataloguing systems. In addition, the databases have a wide variety of access points and serve as the catalyst for the development of many national and regional agricultural information services that are developed around the systems. Unfortunately, their structures also have drawbacks. The effectiveness of participating centres is often subject to funding. Coverage from country to country varies considerably as some centres may only be able to input information that is published within their borders. Staff changes over time and these changes impact the preparation of input.

Services provided by AGRIS and CARIS are primarily free of charge; this improves the access to information, especially for developing countries. Participating centres in small or developing countries may benefit relatively more than centres in big or developed countries. The basic concept is that each country is responsible for gathering information that is published within their borders. The input is then collected centrally and the cumulated total is shared with everyone for general access. Therefore, small, developing countries that may not have much published information are only responsible for inputting that small amount. They, however, equally share with all the other participating countries in the capability to access and utilize the combined database.

Operational statistics are not available on the performances of either database. Requests and responses are not monitored. Consequently, the demand for information and what the most commonly sought information is unknown. User surveys have not been undertaken and the limited evaluations that have taken place have only indicated that the databases are often not well known in a countries concerned. Furthermore, it is unfortunate that the input manuals are out-of-date and that the user manual for the input software is not clearly written, although updates are being developed.

These factors all impact on the effective operation and maintenance of the databases. However, the extensive nature of the information contained is highly commendable and with modifications to the Subject Categories, thesaurus and descriptors could quite easily result in the creation of an useful EST information resource.

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Case Study 4 ISAT

ISAT

INFORMATION AND ADVISORY SERVICE ON APPROPRIATE TECHNOLOGY

The Information and Advisory Service on Appropriate Technology (ISAT) is a service of the German Agency for Technical Cooperation (GTZ). GTZ is a non-profit making organization, founded in 1975 and financed by the Federal Ministry of Economic Cooperation and Development. ISAT was set up in 1988 under the auspices of the German Appropriate Technology Exchange (GATE). GATE commenced operation in 1983 in order to establish working relationships with technology oriented non-governmental organizations in Africa, Asia and Latin America.

ISAT is one of Germany's most important information systems on appropriate technologies, which are defined "as those which appear particularly apposite in the light of economic, social and cultural criteria". These technologies use local resources with minimum damage to the environment. Additionally, they aim to improve the economic, ecological and socio-cultural conditions of the most disadvantaged segments of the population and promote self-help. Amongst its many activities, ISAT is also the secretariat for the AT Forum NGO-GTZ, an association of German organizations and institutions working in development cooperation which aims to promote sustainable development.

In line with the direction set out in the Agenda 21 on improving access to EST information for organizations in the South, ISAT's objective is to promote increased use of appropriate technology in developing countries. This can be achieved by fostering the exchange of experiences and the transfer of knowledge. The services offered by ISAT support both North-South transfer and South-South exchange of technological knowledge. As part of this process, various national and regional networks have developed which function as actors in the multi-directional information interchange on ESTs.

Information Contained

ISAT's current activities cover five main areas: (a) Appropriate building technology, (b) Micro-hydropower and other forms of renewable energy, (c) Locally appropriate land use and resource management, (d) Smallholders and artisanal processing of food and farm produce, and (e) Anaerobic treatment of organic wastes and sewage. Based on these and past activities, ISAT has accumulated information on appropriate technologies in the following fields of expertise:

- Sustainable agriculture and agricultural mechanization;
- Food processing (small scale and on-farm);
- Building and construction materials;
- Renewable energy (generation and application, including domestic use);
- Water supply;
- Organic waste treatment and sewage disposal;
- Information and documentation methodology.

Inquiries related to other issues are usually covered through cooperating expert networks. The information available is comprehensive and includes technical information (both practical and theoretical), details of project experience, contacts to NGOs and experts in the South, details of products and processes, lists of manufacturers and institutions.

ISAT uses both traditional and state of the art technologies and tools. ISAT's documentation includes some 19,000 documents and books as well as more than 200 - mainly international - periodicals dealing with socially and environmentally appropriate technologies. These include grey literature that is usually difficult to trace - project reports and field reports, proceedings of conferences and practically-oriented literature. In addition, ISAT has access to the literature previously contained in GTZ's Agriculture and Rural Development data project - a total of 6,400 titles. ISAT also has access to the database of the Phasing Out CFCs Project. ISAT's institutions file contain records of roughly 1,200 institutions and organizations. This is supplemented by the Appropriate Technology adviser roster, which currently includes details of almost 500 advisors.

Users

Around 2,000-3,000 users annually receive individual advice from ISAT. These include individuals, institutions and organizations who come to ISAT's question-and-answer service (QAS) with a quite specific question or with a very complex problem. Roughly two-thirds of all enquiries come from NGOs and private persons, one-tenth from private companies. A large majority of those with enquiries are in direct contact with rural people, tradesmen, cooperatives and small businesses in developing countries. Dealing with these enquiries is the job of the ISAT advisers. Each individual sector has one such adviser. Depending on the complexity of the enquiry, a number of stages are possible:

- an answer based on the adviser's own knowledge and regional experience;
- internal processing with the help of literature (AT documentation) and discussions with expert colleagues;
- inclusion of practically tested knowledge from GATE's small-scale

Project Fund;
- supplementary help with ISAT's own information packs, put together to suit individual needs;
- inclusion of external experts with a specific specialty and regional knowledge;
- passing the enquiry on to specialized advisory services, companies or institutes;
- passing the enquiry on to regional information associations or ISAT's local partners for processing by experienced members;
- arranging for and financing local or external short-term consultancy.

Of ISAT's services, the question-and-answer service has been in existence longest. Another central plank in ISAT's approach to information dissemination is the emphasis on cooperation with NGOs world wide. ISAT helps its partners to set up and run their own regional information services, to produce information material and train personnel. The information networks currently in existence include:

- SIATA (Service Inter-Africain sur les Technologies Appropriees) in Western and Central Africa;
- RATIS (Regional Appropriate Technology Information Service) in Eastern and Southern Africa
- MAELA (Movimiento Agroecologico de America Latina y el Caribe);
- CLADES (Consorcio Latinoamericano sobre Agroecologia y Desarrollo) in Latin America;
- RISE-AT (Regional Information Service Centre for South East Asia on Appropriate Technology) in Asia.

Partner organizations are supported in the development and testing of appropriate technology solutions. This includes assistance in determining the best possible method of introducing and disseminating a new technology. The cooperation partners maintain contact with their respective target groups so as to ensure proper application of the technology concerned. These target groups may include small scale entrepreneurs, farmers and construction personnel.

In addition to NGO partners, ISAT also provides services for experts in developing countries, field staff members of government organizations and NGOs working in development cooperation as well as the private sector and German development cooperation institutions. When providing information or advice, ISAT can draw on the practical experience of its professional team. For specific fields, however, ISAT calls on external expertise available through a number of networks including:

- BASIN (Building and Advisory Service and Information Network);
- EULEISA (European Network for Low External Input and Sustainable Agriculture);
- MHPG (Micro Hydropower Group).

Through networks such as BASIN, ISAT can provide a more extensive range of information related to building and the processing of local raw materials. Division of work among the partners in the network has meant that ISAT specializes in wall-building (Wall-Building Advisory Service - WAS), especially with regard to economic and environmentally appropriate production, processing and the use of local building materials and components. WAS's principal fields of expertise include burnt clay products and brick kiln technology, natural stone, concrete elements, timber and bamboo products, wall finishes and wall openings (windows, doors, ventilation openings). WAS also offers advice on affordable, as well as ecologically, climatically and environmentally appropriate shelter, training facilities, reference literature and competent information sources (experts and institutions).

Dissemination of information

Besides its work with partner organizations, ISAT has several other means to propagate its knowledge. As mentioned above, there is the Question-and-Answer Service and ISAT has its own documentation center. The documents are catalogued and retrieval is computerized on CDS-ISIS standard. Furthermore, ISAT publishes a quarterly magazine on appropriate technology (GATE = German Appropriate Technology Exchange) as well as technical books and brochures. ISAT also maintains films and other media. In addition, from January 1996 onwards ISAT offers on-line access to the services via the World Wide Web and the URL is *http://www.gtz.de/gate/isat/*. Currently, the ISAT WWW site provides links to other resources on the Web that may be useful to users of the ISAT services. These include:

- the United Nations Home Page;
- Food and Agriculture Organization;
- Japan International Cooperation Agency - Institute for International Cooperation;
- US Agency for International Development;
- World Bank;
- International Institute for Sustainable Development;
- TOOL Foundation (Technology Transfer for Development);
- European Centre for Development Policy Management;
- Institute for Global Communications/ Association for Progressive Communications;
- Alternative Farming Systems Information Center.

More links are likely to be developed in the future (see Box A2 for the ISAT Homepage).

Costs

All services are provided free of charge

Box A2: The ISAT Homepage

to developing countries, whereas industrialized countries are requested to pay the cost price of the service. Access to services available via the Internet requires use of a personal computer, a modem and an account with a WWW or other on-line service.

Regional Networking

The networking activities of ISAT merit detailed consideration. By establishing and extending regional networks, ISAT has deliberately shifted part of its former work to countries of the South. ISAT considers that the demand for AT know-how in these countries must be met locally, quickly and with minimum red-tape. The necessary preconditions for this shift in approach have developed over the past few years and include close cooperation with:

- expert networks and individual cooperation partners in the South;
- German charity and church donor organizations involved in development cooperation through the AT Forum NGO-GTZ;
- expert networks at the European level
- other departments, with the aim of establishing new information structures within GTZ.

ISAT is the hub of a specifically created network of international know-how on Appropriate Technology. At ISAT, resource management has grown to become on an equal footing with pure information and knowledge management. Essentially, this means knowing who is doing what, and where. These know-how resources can be individuals, resource centres or organizations. Modern communications technologies also allow ISAT to perform this information and knowledge management. ISAT's job is to ensure that the people of the Third World are not left behind by the development of the Super Information Highway, but can participate in it actively and benefit from it.

ISAT has supported the development of networks in Africa. For example, a network known as RATIS (Regional Appropriate Technology Information Service) has been set-up in east and southern Africa. RATIS's target group is the national AT information services in the English-speaking countries in the region, as well as the Portuguese-speaking countries (Angola and Mozambique). The network's headquarters are in Harare, Zimbabwe. Individual RATIS partners have considerable expert potential but require improved national structures in order to link them in a way that will allow them to achieve a broader impact. These structures have recently been set in place through RATIS with support from ISAT. In addition, another network, SIATA (Service Inter-Africain sur les Technologies Appropries) based in Ouagadougou, Burkina Faso, is an amalgamation of more 150 western and central African NGOs. In each country, connections between SIATA and the individual countries and groups go through one particular contact person. Communication between SIATA and its partners is in French, even though it does have some members from English-speaking countries. SIATA's aim is to ascertain and document the know-how of the groups, persons, organizations and institutions involved and to enlarge the circle of countries participating in the network. SIATA's efforts are directed at including traditional knowledge from the region in the information and advice it offers. It also wants to increase efforts to involve local experts in on-the-spot advisory work.

Specialized national networks already exist in many Latin-American countries. The obvious thing for ISAT to do, therefore, was to support these networks. These include ANADEGES (Autonomia, Descentralismo y Gestion) in Mexico, CCTA (Comision de Coordinacion de Tecnologia Andina) in Peru and Rede-PTA via the organization AS-PTA (Assesoria e Servios a Projectos en Agricultura Alternativa) in Brazil. Like most of the other ISAT cooperation partners in Latin America, these organizations have at their disposal information and documentation centres dealing with enquiries, further training and technical advice. In order to strengthen this potential and to make it more professional, ISAT is supporting both the specialization and networking of existing information structures. The objective is to ensure that these NGOs establish themselves as competent sources of know-how in individual technological fields.

In Asia, ISAT maintains working relationships with three former cooperation partners. These are GSS (Gami Seva Sevana) in Sri Lanka, SIBAT (Sibol Agham at Teknolohiya) in the Philippines and ATA (Appropriate Technology Association) in Thailand. SIBAT is a contact point to more than 100 NGOs mainly engaged in the field

of organic farming. GSS is involved in the fields of organic farming and biogas technology in Sri Lanka. ATA provides a wide range of information on appropriate technology. In addition to this individual support, ISAT is promoting the establishment of an information service in Southeast Asia. RISE-AT, the Regional Information Service Centre for South East Asia on Appropriate Technology, based at the Institute of Science and Technology, Research and Development (IST) of Chiang Mai University, Thailand. The specialized areas covered by RISE-AT are renewable energy, rational use of energy, anaerobic technology and appropriate building. Since it is does not have any university teaching commitments, IST is particularly suited to be the driving force behind this specialized network. The institute has already become established in this role and is now planning the systematic expansion of specialized information structures in close cooperation with partner organizations in Vietnam, Laos, Cambodia and southern China. The establishment of a regional technology information service for Southeast Asia, based in Thailand, harmonizes with the Thai policy of promoting development cooperation with its neighbouring states.

Lessons Learned

At the UNEP sponsored Paris Expert Meeting on Environmental Sound Technology Information Systems in October 1995, Dr. Reinherd Woytek from ISAT presented a paper evaluating the performance of the ISAT information system. He raised some very interesting points which are presented in Table A4.1 and compared with the ISAT performance of two other GTZ operated systems. ISAT can be considered as an excellent example of an EST information system, which although established some 4 years prior to the Rio Earth Summit, complies in many respects with the goals set down in Agenda 21. It has a very clear focus and an established set of users. The information provided has been tailored to meet user needs and includes practical orientation which relies on ISAT's in-house expertise and that of collaborating organizations. The system managers have shown a willingness to adopt a variety of medium for information dissemination without losing sight of the fact that the target audience is composed of users from developing countries. Hence the emphasis is to maintain free of charge services. One element, the Question and Answer service, is particularly important as it provides the users with the opportunity to minimize the time spent on fruitless searches of databases and other sources of information. Rather the ISAT adviser will work with the user to help frame the questions in order to refine the answers.

ISAT considers that access to information can be improved through a number of measures which would include:

- increase local networking with links to international sources of information;
- improved Information technology infrastructure in developing countries;
- establishment of decentralized or regional information brokers or clearinghouses;
- more open access to information;
- reduced costs;

ISAT is already moving in this direction with its emphasis on regional networking as mentioned in section 6.6 above and with recognition of the importance of client/customer oriented service. Further study of ISAT's methods and some form of evaluation of user perceptions of system performance might provide very interesting lessons for those organizations involved in the early stages of information system design and operation.

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Table A4.1: Comparative Performance of Three GTZ Information Systems

System	Information system for environmentally sound production of textiles in Indonesia	GTZ Hydrocarbon Technology Information Service	Information and Advisory Service on Appropriate Technology (GATE-ISAT)
General Remarks	System under establishment and methodological approach not yet decided. User need analysis under way.	Operational since April 1995. Related to Montreal Protocol seeking to reduce depletion of ozone layer by refrigerator technology.	Since 1977 annually about 2-3,000 inquiries with over 4,000 questions covering various sectors including local building technologies, sustainable agriculture, renewable energy applications, on-farm processing and anaerobic fermentation.
1.) Who are the users of information on ESTs?	Small and medium scale producers of textiles.	So far 200 specific and approx.3000 general requests from industry, government and non-government institutions, policy makers, researchers, project managers and training institutions.	Institutions, organizations, SMEs, consultants, project engaged in the planning, design and operation of anaerobic waste treatment plants, including policy-makers of related sectors.
2.) What information do users need?	To be established and methodology not yet decided.	(1) General information on literature publications and addresses, (2) Institutional reference to application procedures for Ozone Secretariat, (3) Funds or bilateral assistance, (4) Information on refrigeration technology, properties of cooling agents and energy requirements of refrigeration, (5) Production and service related inquires.	Application oriented technical information on (1) construction of plants, (2) process problems and (3) blue prints and search for experts (occasionally).
3.a) What do they need it for?	To gain competitive advantages for cheaper and cleaner production.	As a basis for management decisions and cost calculations.	Planning and construction of medium and small scale plants.
3.b)What do they do with it?	Incorporate in managerial decision making, mainly on investments and marketing strategy.	Decide whether to convert production or not.	Apply in the construction or in the consultancy on the construction of plants.

System	Information system for environmentally sound production of textiles in Indonesia	GTZ Hydrocarbon Technology Information Service	Information and Advisory Service on Appropriate Technology (GATE-ISAT)
4.) What information sources and systems are currently used?	Strong presence of informal exchange among producers, according to culture. Larger producers gain market information through their sales representatives.	**Sources:** industry research institutes Montreal Protocol Secretariat institutions of Member States **Systems:** mailbox through telephone Internet incl. e-mail facsimile, letter, phone, direct contact databank with FAQ ISIS based databank and bibliography with full text access to articles and documents, incl. official protocol.	**Sources:** own expertise external consultants local networks own sector I&D system **Systems:** e-mail, letters, facsimile consultancies exchange of local experts Question and Answers Service (QAS) publication series references in quarterly magazine
5.) To what extent do existing information sources and systems meet user needs?	Within the traditional context probably satisfactorily.	So far only positive reactions to active disbursement of info)incl. Yearbook and magazine"Akzente"). No evaluation to date.	
5.a) Type of information needed	Highest info-demand regarding marketing of products not provided by traditional system.		Technical information "translated" to the application oriented needs and local conditions of planners, constructors and operators of plants.
5.b) Quality of information	Reliable as far as local context is concerned.		Accuracy, timeliness, reliability (usually cross checked against local experiences under similar conditions).
5.c) Access to information	Informal and easy.		Open to all enquiries from DC or DC related projects and institutions.
5.d) Costs of obtaining information	Cannot be established.		Free of charge.
6.) Users evaluation of performance of EST information systems?	Not known.	No evaluations to date.	So far not known. Information considered an input category. No evaluations so far

System	Information system for environmentally sound production of textiles in Indonesia	GTZ Hydrocarbon Technology Information Service	Information and Advisory Service on Appropriate Technology (GATE-ISAT)
7.) How can access to information sources and systems be improved?	Various approaches under discussion: **Info broker** to open up inaccessible plethora of information offers, but: (1) if on commercial basis not feasible for SME, (2) if free of charge, validity of info might be doubted, (3) if Info broker good, then would be employed by a bigger firm. There might be the perception that "independent" info-brokers do not exist and might be subject to "mis-information". **Public information services** would be cheap and accessible, but: (1) state is not considered as most up-to-date and competent to provide information. **User based systems** run by producers themselves, still require the formation of associations or chambers or the like.	**Technically:** Internet and FTP server and WWW. **Institutionally:** partner institutions to increase coverage and cross links(i.e.UNEP information system). Field related information system to be more systematically tapped, collated and presented.	- increase local networking with links to international information sources, - improved infrastructure in DC and capacity for application, - establishment of decentralized or regional info brokers of clearing houses, - increase open access, - reduce cost.
8.) What are the gaps?	Cost, language, but also unclear knowledge about information needs	Poor co-ordination between institutions involved, Insufficient cross-links	(1) Language problems, (2) IPR issues, institutional development slower than progress in EDI-technology and increase in knowledge, (3) Ratio of available information to useful information unfavourable, (4) Cost-benefit ratio unclear, (5) Institutional barriers (potential users of information) and information providers.
9.) How can they be filled?	Support local and decentralized info-systems, incorporate EDI-technologies in traditional information communities.	Increase admittance to full and open access. Closer link to industry. Link all relevant institutions.	Potential users awareness of and access to information systems to be increased. Information providers to shift approach from I&D toward client or customer oriented service.

Source: Presentation by Dr. Reinherd Woytek, GTZ-ISAT, at the Expert Meeting on EST Information Systems, Paris, October 1995.

JOIS

JICST ON-LINE INFORMATION SYSTEM

JOIS is a major component in the diverse range of information services provided by the Japan Information Centre of Science and Technology (JICST). The system provides users with access to worldwide scientific and technical information via JICST's information acquisitions. In addition to JOIS, JICST disseminates information via CD-ROM and through Selective Dissemination of Information (SDI) which supplies individual users with abstracts in given specializations. SDI are drawn from a number of databases which present information in the form of abstracts, citations and bibliographies. The sources of this information are both international and Japanese, and include journals, conference proceedings, technical reports, government reports and pre-prints.

Organization

JICST is a non-profit organization funded partly by the Japanese Government and partly through user fees. The activities of the Centre are dictated by enabling legislation and fall under the direct supervision of the Science and Technology Agency. Established in 1957, JICST is the principal centre of expertise in Japan dealing with science and technical information. It's primary goal when established was to bring about the speedy transfer of scientific and technological information to Japan from the then more industrialized nations. Over the years its goals have shifted slightly and can now be summarized as follows:

(1) To comprehensively collect scientific and technical information on a worldwide scale;
(2) To process information, construct databases and deposit primary documents;
(3) To provide services such as on-line databases, publications, photocopying, translation and public reading;
(4) To offer and encourage technical development and international cooperation in the field of scientific and technical information activities.

The two comparable information services in Japan are provided by JAPIO (Japan Patent Information Organization) and NACSIS (National Academic Centre for Science Information System). According to a recent study by Science and Technology Agency in Japan, all three organizations are likely to play an important role in the development of both the National Information Infrastructure (NII) on science and technology and, through APEC, the Asia-Pacific Information Infrastructure (APII).

As could be expected from an organization with over 30 years experience in information dissemination, JICST has developed a sophisticated and high quality information processing system. This will be discussed in more detail in the next sub-section. JICST estimated revenue in 1995 was Yen 17,980 million (approximately $200 million) of which 48% was estimated to be derived from service income. Table A5.1 presents a breakdown of revenue and expenditure for 1995. Expenditure has increased by around 5% in recent years reflecting a sustained commitment by the national administration to information dissemination. Employment levels at the Centre, however, have continued to fall and staffing currently stands at 318 permanent employees. The work of these in-house employees is supplemented by the activities of approximately 3,000 outside abstractors who are responsible for reviewing, abstracting and indexing relevant publications.

Flow of Information within the System

JICST collates information from a wide range of sources (mainly from industrialized countries - Japan 58%, USA 17%, UK 9% and Germany 4.5%) and covering a variety of subjects. According to data for 1994, the breakdown of journal titles by subject was as shown in Table A5.2. From these sources, abstractors annually prepare around

Table A5.1: JICST Revenue and Expenditure (1995)

Revenue	Yen Million	Percentage
Government Investment	4,660	26%
Government Subsidy	3,380	19%
Service Income	8,700	48%
Other	1,240	7%
Total	**17,980**	**100%**
Expenditure		
Information Collection and Provision	5,760	32%
Research and Database Development	860	5%
Expenses	6,180	34%
General Administration	4,560	25%
Other	620	4%
Total	**17,980**	**100%**

700,000 citations and enter them into the databases. Only a small proportion of primary sources are related to environmentally sound technologies (i.e. the fields of environmental pollution, energy and agriculture). Figure A5.1 shows how information is selected from the primary sources, abstracted, indexed and then made into machine readable records. The records are available in printed form (Current Bibliography on Science and Technology - CBST) and in electronic form via databases on CD-ROM and on-line.

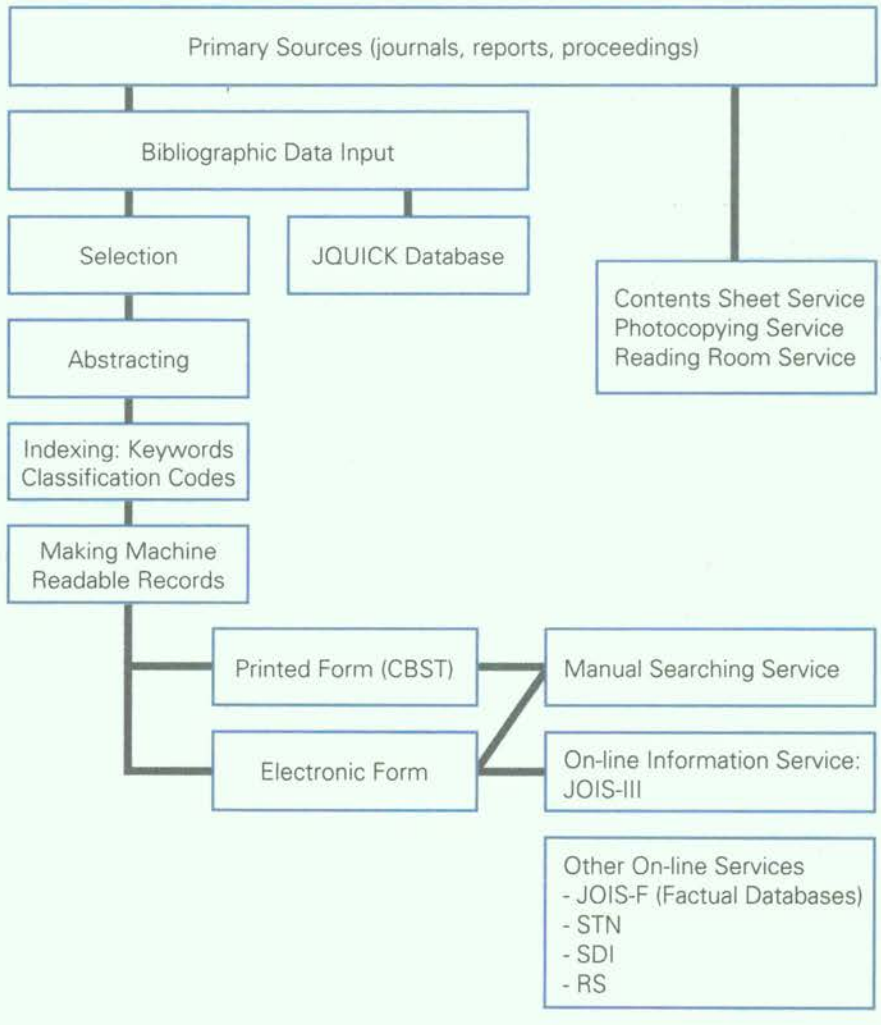
The major Japanese databases on JOIS include JICST File which contains 9.2 million records on general science and technology, JMEDICINE File with 2.7 million records on Japanese medical science, JICST-E File which has 2 million records containing English translations of Japanese bibliographies and citations, and JCLEARING File with 45,000 records on research projects in Japan. In addition, both the TOXLINE and INFOTERRA databases are accessible via JOIS.

JICST recognizes the importance of environmental issues and in March 1992 started the JICST Directory System for Earth Science and Technology Information referred to as the *JICST Directory System* (JDS). This directory seeks to facilitate access to research information for Japanese and international researchers. JICST has constructed the system and database, with funding from the Research and Development Corporation of Japan (JRDC) from 1990 onwards. This system is accessible via public telephone line and users can search the database free of charge while on-line. The computer used is a DEC VAX 6000 model 310 and is connected to the Earth Observation Centre of the National Space Development Agency of Japan (NASDA) through a DDX-P network. Four international nodes have been

Table A5.2: Journal Titles by Subject

Subject	Japanese Journals (%)	Non-Japanese (%)
General Science & Technology	6.2	3.6
Physics	2.6	7.8
Chemistry	6.6	14.7
Metallurgy, Mining & Earth Science	6.1	11.3
Biochemistry	4.4	10.4
Agriculture, Forestry & Fisheries	18.3	4.6
Medicine	24.1	8.6
Mechanical Engineering	8.8	12.1
Management Science	4.4	9.7
Nuclear & Energy Eng.	2.7	2.2
Electrical Eng. & Electronics	3.7	6.1
Construction	7.4	6.0
Environmental Pollution	4.6	2.4
Others	0.4	0.5

Figure A5.1: Overview of JICST's Information Flow



designated under the auspices of the Committee on Earth Observations Satellites (CEOS) Network at NASA in the US, the European Space Agency (ESA) in Italy, the Canada Centre for Remote Sensing (CCRS) and at NASDA in Japan. These nodes mutually exchange data sets and it is possible for users to search and acquire data globally from each node. At present, the focus of the system is on observations and measurement data related to the quality of the global environment made available by national and public research institutes, universities and public corporations. Although, the information presently contained in JDS is not directly related to ESTs, the system is promising and its development could work as a model for a similar Japanese based system dealing with ESTs. The expansion of this project is already envisaged to a more extensive computer system which contains access via Internet, an electronic bulletin board and using the MD2 (Master Directory) software for UNIX. Communication between the service providers and users, and between the users themselves would be encouraged through an e-mail facility.

It is also possible to access the *Science and Technology Network* (STN) through the JICST. STN is an on-line system providing users with a direct link to a resource containing over 180 international scientific and technical databases in the form of bibliographic, full text and data files. STN, like JICST, is a non-profit making service. It is sponsored, and jointly operated by JICST, FIZ Karlsruhe (Germany) and the Chemical Abstracts Service (USA). There are a number of databases on the STN which relate to the themes of environment, energy or technology. The most notable are listed in Table A5.3 with details of the year they commenced operation and the number of records on file. JICST-E is also available through STN.

Structure of the Computer System

JICST began its information processing activities in 1961 and within six years the system was fully operational and using Chinese character input/output procedures. It began operations in 1968 with the FACAM 230-50. JOIS I came on-line in September 1976 but immediately began to encounter memory related problems having less hard disk space available than the average personal computer today. In 1981, JOIS II came on-line with new, faster computers and a better operating system. This was followed by the commencement of the JOIS III service in 1990 with the introduction of Hitachi M-660 series computers. In the intervening period the capacity was enhanced in order to allow networking activities as part of STN International (from 1986) and IBM 3083 machines were introduced. The computer system has been gradually enhanced and currently runs on mainframe computers developed by Hitachi including the HITAC M-880/180 and M-860-200. A new system (JOIS IV) is close to finalization with a focus on the "gateway" system model.

Information Contained and User Evaluation

UNEP undertook searches through JOIS on three occasions. The first search was undertaken on the JICST File (Japanese) with the key words "environmentally sound technologies". As could be expected only 5 references were identified covering technology transfer, control of greenhouse gases, biomass gasification and charges for pollutant emissions.

In general, each record includes a citation number, title, author, journal number, volume number, citation indicator, abstract, classification and key word. One of the actual limitations of this approach is that the keywords used in abstract and index development have

Table A5.3: Environment Related Databases Available on STN as of March 1995

Database	Subject	Period	Records
CABI	Agriculture	1979-	2,975,000
COMPENDEX	Engineering	1970-	3,640,000
ENERGY	Energy	1974-	3,087,000
POLLUAB	Air, land & freshwater pollution	1970-	202,000
SESAME	EC Energy Research Projects	1975-	12,000
TA	Technology Assessment	1975-	8,000
TOXLINE	Toxicology	1940-	1,997,000
UFORDAT	Environmental Research	1974-	33,000
ULIDAT	Environmental Literature	1976-	250,000

not been designed with ESTs in mind. Hence, records which include EST element may not show up in users searches. Producing guidelines on how to index and abstract EST related documents should be explored further with database operators such as JICST.

The overall impression is that JOIS is not currently set up to disseminate information on EST. The user has to search by cross-referencing key words and needs to have a clear idea of what he or she is looking for so as to minimize time spent at the computer and costs incurred. Minor modifications might make the system more appropriate as a source on ESTs.

Accessibility and Costs

JOIS is a Japanese language on-line information system and is available in most areas in North and South America, Canada, Europe, Australia and South East Asia, through international packet switching networks such as TYMNET, SPRINTNET, DATAPAK, TRANSPAC and PATEX-P. It is also accessible through domestic Japanese gateways such as MARUNET, KINIO-COSMONET, IRIS, UMIN, AMS-PCNET, NIKKEI TELECOM and G-Search. Users can connect to JOIS with a personnel computer, modem and telephone line. Any modem that operates at 300, 1,200 and 2,400 bps can be used. Within Japan, the system can be accessed via 22 points through JICST's network of offices. With the exception of South-East Asia, it is difficult to ascertain the degree of accessibility of the JOIS service to potential users in developing countries and those in economic transition. The available literature, however, tends to suggest that JOIS is essentially targeted at the needs of Japanese users whereas STN is primarily servicing users in developed countries. Although, theoretically it is possible to access these systems from anywhere in the world, the high Yen at present makes the cost of accessing the system in Japan from developed countries somewhat prohibitive. Prospective users of the system must register with JICST or its agents. They pay a basic fee (approximately $10 per month), are given a password and are entitled to some discounts with regard to on-line charges during the first calendar month.

The current costing structure for the on-line systems (JOIS and STN) is based on connect time rates and charges for the on-line display of citations. The average charge per minute is around $1.60. Additional charges are made for off-line printing of $7 for handling and $0.90 per citation for printing. Users interested in a particular publication are charged for photocopying and postage. In addition, a translation service is available from Japanese to English, German, French, Russian, Italian and Spanish at set rates for the specific language (approximately $80 per page). All charges are made in US Dollars.

Lessons Learned

The JICST system is well-designed and appears to function very effectively. Its strengths include an extensive range of information sources, rigorous quality control procedures and a state of the art computer system. The system is well-documented with comprehensive JOIS guides available in English and Japanese. These documents explain the key features of JOIS, the files and service hours, and provide details of key international access points. Technical details on software and communications set-up are also included together with an example of normal access procedure and commands.

The information contained in specific files on JOIS relates only in part to ESTs, although a significant amount of reference material deals with environmental pollution and energy issues. It is not presently a primary EST information system but has the potential to become one. This could be achieved with relative ease and would require the identification of relevant sources of information and documentation on EST within Japan. The only limitation, however, would be lack of immediately accessible source material on Japanese environmental technology in English. Any databases developed by JICST would require a translation programme or a proactive approach to collecting relevant EST reference material in English. The use of abstractors and indexers of EST terminology would also be very helpful in retrieving EST related information from the systems.

JICST is essentially concerned with servicing the domestic Japanese information market although there has been a significant shift in recent years with a growing focus on export information from Japan. This shift may be given even further impetus with the possible establishment of a new JICST branch in Singapore in the near future.

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ICPCT

INDIAN CENTRE FOR PROMOTION OF CLEANER TECHNOLOGY

When operational, the Indian Centre for Promotion of Cleaner Technology (ICPCT) will provide on-line information available via Internet about technologies for cleaner industrial production and pollution control, along with other related information. It will be operated by a new entity which will be located on the premises of the National Environmental Engineering Research Institute (NEERI). This system is especially interesting because it will operate in a developing country and will build on NEERI's past experience with the development of a cleaner production technology databases. According to NEERI, the adoption of cleaner technologies in India has been considerably hindered by lack of information exchange between various interests with respect to the opportunities for pollution prevention. A centralized database on the availability of and accessibility to cleaner technologies alongside with their economic evaluation would be very important in the Indian context. Hence in April 1991, NEERI began the task of generating an information package on cleaner technologies called the Cleaner Production Case Study Database (CPCD). This package has come to form a key component in the establishment a Clean Technology Network for India with support from the World Bank and under the direction of the Ministry of Environment and Forests (MEF).

Organization

NEERI is a constituent laboratory under the Council of Scientific and Industrial Research (CSIR), Government of India. Founded in 1958, it now employs 573 people. Its 1994-95 budget (received as a grant from CSIR) was approximately U.S. $1.6 million. NEERI also accepts sponsored projects, which raised U.S. $3.4 million and employed 163 people in the same fiscal year.

The Clean Technology Information Network would have the following structure:

- The Host Centre would be located at MEF;
- A National Information Centre for Cleaner Technologies (NICCT) would be established at NEERI;
- Sectoral centres would be located at the Tata Energy Research Institute (TERI) and the National Chemical Laboratory (NCL).

In addition, there would be eight subcentres located in private power corporations, the National Council for Productivity and at various research institutes. CTIN would facilitate the demonstration of cleaner technologies at pilot and full scale.

Within CTIN, the National Information Centre for Cleaner Technologies at NEERI would be the agency responsible for overall coordination. As an autonomous body, it will receive grants-in-aid from the Ministry for five years. It will then become self-supporting and independent of government intervention.

NICCT's first annual budget is expected to include approximately U.S. $1.2 million for capital investment, and it will begin with a staff of 72. Its objectives include:

- Development of a master database,
- Information quality control,
- Development of guidelines for selecting and presenting demonstration projects,
- Networking with regional systems,
- Inventory of available clean technologies related to the needs of developing countries,
- Performance Evaluation Ratings (PER) of technologies,
- Identification of clean technologies based on PER.

System Specifications and Performance

NICCT will use a combination of workstations and PC's in managing the system. For instance, NEERI's case study database, the software package CPCD has been developed in FOX-BASE for on-line storage, editing and retrieval of the case studies.

In the main centre at Nagpur, staff will exercise quality control over the database, screening potential new material and purging outdated entries.

NICCT will have a Board of Governors to direct, monitor and evaluate ICPCT. The Board will devise an appropriate mechanism for user feedback. Specialized task forces will help the Board evaluate the efficacy of the system.

Information Contained

NEERI has already prepared a database of 510 case studies of cleaner technologies for several unit processes within each of 14 industrial sectors (an example is presented in Box A3 below). It will become part of the ICPCT master database. The studies fall into three general categories: Waste minimization at the source; resource recovery based on "end of pipe" treatment; and waste utilization. 38% of the case studies are from India, 62% from abroad.

To arrive at these 510 studies, NEERI analyzed published literature and accessed established databases. Its staff consulted with research & devel-

opment centres within industries, industrial associations, eminent experts, and technical wings of financial institutions. Over 1000 research documents were scanned. These specific industry and unit process case studies will be available on-line, along with bibliographic databases developed by NEERI. ICPCT's master database will also provide the following:

- Waste minimization technologies including the stage of development, terms of supply, sources and benefits;
- Energy conservation technologies;
- "End of pipe" treatment technologies facilitating waste utilization, recycling, reuse and by-product recovery;
- Integrated waste management technologies;
- Technologies for reduction or elimination of toxic and hazardous chemicals;
- Financing mechanisms and incentives for implementation of cleaner technologies;
- Raw material usage, energy and water consumption and waste generated per unit of production;
- National and international environmental management policies and laws, and effluent and emission standards;
- Listings of equipment suppliers for environmental management;
- Listings of human resources for environmental management, including academic, research and training institutions; individual consultants and consulting firms; and voluntary organizations.

The system will include other databases which are available to the Ministry of Environment and Forests. It may offer access to two other governmental systems: the Biotechnology Information System operated by the Department of Biotechnology, and a system on emerging technologies (TIFACLINE) operated by the Department of Science and Technology through the Technology Information Forecasting and Assessment Council.

Accessibility and Cost

Anyone with a PC and modem will have access to the system. It will be available to users throughout the world via Internet. Access will be by password and user identification code. After two years of operation, a billing system

Box A3: Case Study from NEERI's CT Database

1. Headline: Resource recovery based on end of pipe treatment fibre recovery unit.
2. SIC or ISIC code:
3. Name & location of company: Pollution abatement & control technology [PACT] publication for the pulp & paper industry. Industry & Environment Office in collaboration with INFOTERRA/PAC, United Nations Environment Programme.
4. Cleaner technology category: Recycling, reuse & reclamation.
5. Case study summary: Process and waste information:
   The last stage of a hydrocyclone cleaning system contains impurities, sand, etc. & many times this also contains good fibre. Recovery of this fibre is important. In the ELP recovery unit separation is obtained in the following manner. Initial separation is accomplished by ELP 440 cleaners. The accepts are returned to the process, generally to the preceding cleaner stage, the rejects to a separation tank. The operating pressures are set between 180 kpa to 220kpa. In the separation tank, a white water bypass line supplies sufficient dilution to reduce the rejected stock consistency of the hydrocarbons to about 1% oven dry. This stream is split into two lines, one to the final reject exit, the other is recirculated back to the hydrocyclone cleaners. The separation is based on gravitational sedimentation between two baffles; heavy particles such as sand, scale, etc. cannot be recirculated.
6. Scale of operation: NA
7. Stage of development: Pilot Plant
8. Level of commercialization: NA
9. Material/Energy Balance: NA
10. Economics:
11. Cleaner production benefits: Reduced liabilities
12. Technical constraints: NA
13. Date case study was performed: NA
14. Contacts and Citation:
15. Type of source material: Magazine
16. Citation: "V-press helps Georgia-Pacific Squeeze profits from sludge" PIMA Mag - 64,2, 16 [1982]
18. Level of detail of the source material: NA
19. Industry/Program contact and address: UNEP Industry and Environment Office
20. Abstractors Name & Address: N.Y.Ghare, NEERI, Nagpur
21. Keywords: Recycle, reuse, material recovery, sludge dewatering, coil filter, v-filter, expeller screw.

will be built into the management software. Connect time and volume of information retrieved will determine the fee. The fees will be reviewed annually. NICCT will collect the revenue and reimburse the sectoral and sub-centres for their recurring costs.

Users without computer access can receive a hardcopy index and photocopies of documents. Materials will be in the English language, but translation services will be available at cost.

Lessons Learned

It is not possible to assess the strengths and weaknesses of this system, since it is not as yet in operation. However, assuming it is executed as planned, it promises to offer a growing database of information about environmentally sound production technology and related subjects to a global audience, including those without computer access. The size of the user fee will restrict access to some extent, but that will not be determined until after two years of operation. With the Government of India and the World Bank as sponsors, and with the support of the well-established NEERI, ICPCT's prospects for making a long-lasting contribution to the field are quite good.

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EREC and EREN

ENERGY EFFICIENCY AND RENEWABLE ENERGY CLEARINGHOUSE (EREC) & RENEWABLE ENERGY NETWORK (EREN)

The Energy Efficiency and Renewable Energy Clearinghouse (EREC) and the Energy Efficiency and Renewable Energy Network (EREN) are information systems owned by the United States Department of Energy (DOE) and operated by the Midwest Research Institute at the National Renewable Energy Laboratory (NREL) in Golden, Colorado. EREN provides broad on-line services related to technologies for energy efficiency and renewable energy and is accessible via the World Wide Web (WWW). EREN is also a gateway to other Internet resources, including maps, images, videos, sound and text. The Energy Efficiency and Renewable Energy Clearinghouse (EREC) provides information and technical assistance in related to specific applied energy technologies. It is also accessible on-line via EREN.

Organization

The DOE is a cabinet-level agency of the federal government and NREL is one of several energy laboratories belonging to the agency. NREL is the United States leading laboratory for renewable energy and energy efficiency research. It was established by the Solar Energy Research. Development, Demonstration Act of 1974 as a national centre for federally sponsored solar energy research and development. Originally called the Solar Energy Research Institute, the Laboratory began operations in 1977. NREL, which gained national laboratory status in 1991, is a contract operated laboratory owned by the US DOE and managed by the Midwest Research Institute of Kansas City, Missouri, a not-for-profit laboratory specializing in performing and managing research for public and private clients.

NREL's mission is to lead the US toward a sustainable energy future by developing renewable energy technologies, improving energy efficiency, advancing related science and engineering, and facilitating technology commercialization. Key to NREL's mission is the support it provides to the transfer of renewable energy and energy efficiency technologies from the public to the private sector. NREL employs about 1,000 staff including post-doctorates, visiting professors and students. In 1995, the total funding for the laboratory was $237 million, of which nearly 95% came from the US DOE Office of Energy Efficiency and Renewable Energy. The private sector and other DOE offices provide the balance of NREL's funding. About 56% of funding is used in-house with 44% subcontracted to industry and universities.

EREC is operated by a private organization called NCI Information Systems, Inc., McLean, Virginia, under contract to NREL. There are currently 20 staff employed at EREC. EREN, on the other hand, is directly operated by Midwest Research Institute. The history of EREC begins in 1976 when the US Department of Housing and Urban Development, with DOE funding, established a forerunner to EREC - the National Solar Heating and Cooling Information Centre (NSHCIC). This information centre dealt with information referrals on solar energy, managed seminars, developed technical literature and prepared exhibits. The DOE assumed full responsibility for the Centre in 1981. The Centre's focus was narrowed to only information referrals but widened to include all renewable energy options and energy conservation. It was consequently renamed the Conservation and Renewable Energy Inquiry and Referral Service (CAREIRS). Three years later the DOE also established the National Appropriate Technology Assistance Service (NATAS) to provide scientific, engineering and small business development assistance related to conserving energy and renewable energy technologies. In January 1993, NREL took over administration of both CAREIRS and NATAS. These two services were consolidated one year later to create EREC. Ten months later, in October 1994, the EREN WWW server was made public via the Internet (see Box A4). It was not established under statute of administrative regulation, although expenditure on the programme is dependent on Congressional appropriation. The EREN system employs five staff.

System Specifications and Performance

EREC receives almost 60,000 public inquiries per annum through a nationwide, toll-free telephone service, and a post office mailbox. EREC also maintains a toll-free bulletin board system (BBS) and a telecommunication device for the deaf (TDD) number. In addition, EREC has an Internet address to which inquiries can be posted. Details of the hardware and software requirements to operate the system are available directly from NCI systems. However, this information may be proprietary. Staff at EREC respond to inquiries using a computerized process. The software was developed by NCI and provides EREC specialists with the ability to perform on-line searches of an extensive information database. This enables staff to provide callers

with information immediately over the phone. and/or prepare a written response and package of relevant publications. Callers generally receive a mailed response within a week to ten days after calling EREC. Responses requiring additional research are processed within 15 days, depending on the nature of the inquiry. System performance with respect to EREC is measured in terms of the number of inquiries received monthly, quarterly and annually.

Box A4: The EREN Homepage

EREN is a multi-media, Internet-based information system. It is a gateway to over 300 worldwide electronic information sources related to energy efficiency and renewable energy. An Unix workstation is used to provide the WWW host. From EREN's home page, the user can select more specific information from a choice of Building Technologies, Industrial Technologies, Transportation Technologies, Utility Technologies, Technical and Financial Assistance, and the Federal Energy Management Program. The EREN user can register in order to be notified of significant updates in the EREN system and offer comments or suggestions by completing the User Feedback Survey. The user can also access the DOE's third related Internet site called Renewable Systems for Village Power (RSVP), which provides information on renewable energy systems in remote villages.

Information Contained and User Evaluation

EREC maintains an inventory of over 250 publications including topical fact sheets, technology briefs, overviews of research and development programmes sponsored by the DOE and other government agencies, magazine and journal articles, conference proceedings, and educational and curriculum materials for teachers and students. The key sources of information include the US DOE's publications, public and private organizations involved with applying and/or promoting renewable and energy efficiency technologies, industry periodicals, conference papers, personal contacts with industry experts, professional experiences of EREC staff, product literature and information from the Internet. EREC also maintains around 500 computer-generated information briefs that contain specific technical information, referrals to organizations and sources of products and services, and bibliographies. These briefs are updated continuously. Only around 5% of this information relates to international experience with energy efficiency and renewable energy. The information is collected based on a set of criteria on the currency of the information source, availability and cost of acquisition. A large part of the information presented through the system is prepared for inclusion through editing and abstracting by staff at NCI and NREL. This same information is subject to technical reviews by EREC specialists, NREL experts, DOE programme experts, industry experts and practitioners.

EREC provides information on 70 topics related to energy-efficient technologies for residential, commercial, industrial, agricultural, institutional and transportation sector applications including:

- Building envelope measures (insulation, weatherization, windows, resource efficient construction principles and techniques, etc.);
- Building equipment (lighting, heating, ventilating and air conditioning, appliances, etc.);
- Other devices (motors, controls, energy management systems).

Materials on renewable energy technologies include active and passive solar water and space heating, passive solar cooling, photovoltaic, small-scale hydroelectric and wind energy systems, biomass and municipal waste to energy conversion, solar thermal electric power, geothermal and ocean energy, electric vehicles, alcohol fuels, wood heating and hydrogen fuels. Energy efficiency and conservation information is available on topics that include insulation, energy-efficient lighting, windows, and appliances, weatherization materials and techniques, heating, ventilation, and air conditioning systems, moisture control, energy efficient housing design and construction, and co-generation. The information available via the system is updated continuously.

EREC offers information and assistance to a broad audience. Users include anyone interested in energy efficiency and renewable energy. The system is used by consumers, builders, teachers, students, businesses, entrepreneurs, trade groups, media, government officials at all levels, policy makers, energy engineers and members of other professions.

EREC's technical specialists can provide basic assistance on a wide range of energy efficiency and renewable energy topics. Most assistance falls in the following categories: design of systems and structures, comparison of

systems, appliances and components, system troubleshooting and problem solving, and assessing the feasibility of technologies for specific applications. For inquiries that are geographically specific or highly technical, EREC maintains an expert referral network to both private and government agencies. EREC can identify sources of information and assistance in national laboratories, the state energy offices, trade associations, professional and non-profit organizations.

EREN provides information on renewable energy including solar, wind, geothermal, hydrogen, ocean, alternative fuels and chemicals. It serves as a single point of access to qualitative information on energy efficiency and renewable energy technologies. It links users to documents, databases, bulletin boards, discussion groups, gophers, FTP sites and other World Wide Web servers.

EREN can be searched by subject, keyword, type of organization, type of service and by an alphabetical listing of sites. The information accessible via the system is predominately US based with only about 10% of the resources accessible via EREN being non-US. EREN identifies and creates links to information and data on a daily basis.

Accessibility and Cost

EREC and EREN are accessible to anyone via Internet and free of charge. The users need access to a personal computer with a modem and telephone line connection. Within the US there is a toll-free computer bulletin board system. In this instance, users need not be concerned about the costs of the telephone connection time. For users outside the US, the Internet is the most direct form of access. Requests can be made by fax, phone and normal mail and the service promises a relatively rapid turnaround of all requests. However, the information is in English only and translation is not available. Some servers accessible through EREN are multi-lingual (normally main language - Spanish, French, German - with English support). EREC provides two publications in Spanish at the moment. Individuals without access to the Internet, and this may apply to users from developing countries in particular, cannot gain access to EREN related resources. In this instance, they would need to rely on specialists at EREC to download and relay the relevant information.

Lessons Learned

EREC benefits from having high staff capabilities from NCI Information Systems, NREL and the US DOE. It also has abundant resources and global access to information and data. However, the system suffers, as many systems seem to do, from the limitations of funding uncertainties in times of shrinking public sector budgets.

EREN's main strength is that it is a system with a single point of access (a single gateway) to a wide range of related resources on the Internet. The principal weakness however is that the system has been designed to meet the needs of users with access to the Internet - thus it is not really designed to meet the needs of users from developing countries.

Another important test of both systems' performance can be measured in terms of user perceptions. For EREC, user reaction is frequently canvassed through request order forms. On every document order form users are requested to rate the quality of the service provided by EREC from poor to excellent. Other approaches include telephone surveys, letters, Internet email, comments received through the EREC bulletin board email to the system operator. User reactions on EREN performance are obtained through the User Registration process, electronic mail messages sent directly to the EREN webmaster and via conventional surface mail. However, staff at EREN consider that these methods have been only marginally successful and need to be more focused in order to ensure a more demand led approach.

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GREENTIE

IEA/OECE GREENHOUSE GAS TECHNOLOGY INFORMATION EXCHANGE

By transferring knowledge on technologies for reducing greenhouse gas emissions, GREENTIE is seeking to play a role in addressing global environmental concerns. As concentrations of greenhouse gases such as Carbon Dioxide, CFC's and Methane continue to rise, the threat to the global climate is now widely acknowledged. Under the United Nations Framework Convention on Climate Change, signatory countries have agreed to take action to reduce greenhouse gas emissions. The technologies needed to effectively control and prevent Greenhouse Gas emissions are developing all the time. Consequently, scientists, technicians and administrators working towards greenhouse gas mitigation need to keep pace with these technological developments. Indeed, national governments who have joined GREENTIE see it as an important contribution towards their commitments to the United Nations Framework Convention on Climate Change. The system seeks to meet the needs of the scientific community for a tool which can be utilized to foster greater knowledge transfer. For suppliers of technologies, GREENTIE provides access to new markets. For policy planners and decision makers, the people who can bring about the application of technologies, GREENTIE provides independent and free information services that can quickly help identify the various options available.

Organization

GREENTIE is an initiative of the International Energy Agency (IEA) and the Organization for Economic Cooperation and Development (OECD). It supports those who tackle greenhouse gas related problems by diffusing and exchanging information on technologies. GREENTIE builds on the network that the IEA and OECD established over 20 years in the global communication of information on science and technology among member countries (Australia, Austria, Belgium, Canada, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Japan, Luxembourg, the Netherlands, Mexico, New Zealand, Norway, Portugal, Spain, Sweden, Switzerland, Turkey, the United Kingdom and the United States). GREENTIE's service is available to all countries of the world. Information is made available through a query-response service and a GREENTIE Directory (database) accessible via the Internet. GREENTIE aims to expand collaboration between IEA member and non-member countries using this approach.

GREENTIE was conceived of following the 1992 Rio Summit. A three year development phase took place from October 1993 to October 1996. The organization is governed by a steering group made up of IEA member countries. Additionally, there are GREENTIE Liaison Groups (GLGs) whose relationship with GREENTIE is dependent upon an implementing agreement pertaining to access and information input. The operation and development of GREENTIE has been delegated to Netherlands Agency for Energy and Environment (NOVEM), which serves as the headquarters as well as providing an Operating Agent. NOVEM has managed the programme's development with an approximate budget of $700,000 and a staff of around 5 people. Currently GREENTIE is under review by the steering group to decide upon future steps of programme development.

System Specification

GREENTIE comprises a worldwide network of information sources. The system is multi-media in its approach employing the use of the WWW, database and hard copy dissemination methods. For instance, information on organizations and their expertise is contained in GREENTIE's own database, the Directory. The GREENTIE Directory Database contains the addresses of organizations with expertise related greenhouse gas mitigation technologies. The Directory provides background information on the services and technology provided (two examples are contained in Box A5). The software used is FOX PRO database and WAIS on the Internet.

More in-depth information from existing data sources within IEA and the participating countries, is available through information links which GREENTIE has created with other organizations. Links are currently maintained with organizations such as R&D institutions, manufacturers and the implementing agreements of the IEA and OECD which keep detailed information on greenhouse gas mitigation technologies. Through the formation of these links, GREENTIE has made this information accessible to users through its own system. Also information on five key IEA programmes are available via the GREENTIE WWW site (see Box A6). These are:

- CADDET Energy Efficiency;
- CADDET Renewables;
- IEA Heat and Pump Centre;
- International Centre for Natural Gas Technology Information;
- IEA Coal Research;

Direct links to the homepages of many of these organizations are available from the GREENTIE homepage. Moreover, information will be available in the near future on the following IEA

Box A5: Sample Search Results from GREENTIE

The following are the first 25 items that match your query **'clean technology'**. Note that there may be more items that match that are not shown (the search is limited to 50 matches). You might want to further qualify your search (use AND and NOT) to limit the matches.

United States: Bio-Recovery Systems Inc.
(see details provided below)

Japan:	Clean Japan Center
Japan:	Mitsui Engineering and Shipbuilding Co.,Ltd., Chiba Research Institute
Japan:	School of Biosphere Sciences, Hiroshima University
Japan:	Research Laboratory of Resources Utilization, Tokyo Institute of Technology
United Kingdom:	DAVID J WHITE
United States:	Institute of Clean Air Companies, Inc.
United Kingdom:	NOTTINGHAM ENVIRONMENTAL
United States:	Gene W. Ross Engineers, Inc.
United States:	Institute of Clean air Companies Inc.
Australia:	EEP Management Pty Ltd
United Kingdom:	CRE GROUP LTD
United States:	Energy Insurance and Bonds
United States:	Environmental Information Networks, Inc.
United Kingdom:	BRITISH WIND ENERGY ASSOCIATION (BWEA)
United States:	Environmental Information Networks, Inc.
United Kingdom:	TODAYSURE PROJECTS
Netherlands:	Kropman BV
United Kingdom:	MISTCOURT LTD
United Kingdom:	WELLMAN PROCESS ENGINEERING LTD
United Kingdom:	WILLIAM BATTLE ASSOCIATES
Netherlands:	Stichting Energieonderzoek Centrum Nederland
United States:	Tim Olsen Consulting
Australia:	Biomass Energy Services and Technology Pty Ltd
Australia:	Mechron Australia
United Kingdom:	ARROW ENVIRONMENTAL SERVICES LTD

Print out of text from 1st entry above.

United States: Bio-Recovery Systems Inc.

Postal address:	United States
Street address:	2001 Copper Ave., Las Cruces, 88005 USA
Telephone:	+1-505-523-0405
Contact person:	Godfrey Crane

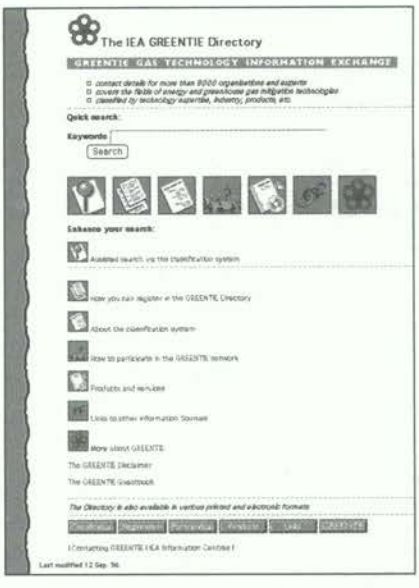
Products and services: Bio-Recovery Systems Inc. manufactures equipment used to clean sludge, ash, and other biomass, and remove heavy metals.

programmes:

- Energy Technology Data Exchange (ETDE);
- IEA Greenhouse Gas R&D Programme;
- Energy Technology Systems Analysis Programme (ETSAP);
- Buildings and Community Systems.

Information Flow

To obtain information for the Directory, GREENTIE has set up a global network of contacts made up of GLGs in member countries and from the above-mentioned IEA/OECD programmes. GLGs have the local knowledge needed to identify information sources for greenhouse gas mitigation technologies. They are also on hand to distribute GREENTIE's products and to help users make effective use of GREENTIE's facilities. The network is coordinated by the GREENTIE Centre in the Netherlands.



Box A6: The GREENTIE Homepage

Users range from policy makers and planners, to factory managers and engineers; the GREENTIE concept serves all those whose work concerns greenhouse gas mitigation.

Database

The GREENTIE Directory is a database which has approximately 5,340 entries within its system, all of which are not yet formatted for operation. These entries are indexed by technology and upon query (using a key word search format), reveal technology alternatives and information on the technology developing institutions, including contact information. Beginning in the fall of 1995, the GREENTIE Directory was made available via Internet.

The entries found in the database are submitted directly by the participating national agencies. Each country has established target levels of entry which they are encouraged to achieve. While information contribution to the system is continual, the system is updated annually. All entries are in English.

The environmental considerations of the technologies within the system vary from technology to technology; all technologies are environmentally *improved* but they are not limited to front-end technologies.

Other Methods of Dissemination

Through an assessment of user needs, GREENTIE has developed the following range of products:

- *Enquiry Service*: Anyone with a question concerning greenhouse gas mitigation can contact GREENTIE. These questions may seek information on the technology options that are appropriate to a certain situation; or, information on suppliers of a specific technology.
- *Supply Identification Paper*: SIP is a customized document containing information on relevant technology suppliers. On receipt of an enquiry, technical experts at the GREENTIE Centre will use the GREENTIE Directory and other databases of the IEA and OECD to search out information on the technologies needed to solve the problem, together with contact information on the relevant suppliers. All this data is compiled in a SIP. With the SIP, the GREENTIE user can take the next step towards greenhouse gas mitigation. And with a list of alternative suppliers, the user has the necessary bargaining power to select the most suitable party for the job. GREENTIE makes no charge for the provision of a SIP.
- *General Readers*: While many enquiries are user-specific, some are of a more general nature. Answers to these enquiries will be useful to a wider audience and are therefore dealt with differently. Like the SIP, General Readers contain information on technology suppliers and give background information on technologies. Unlike a SIP, a General Reader publication is widely distributed, not just in response to enquiries.
- *Directory*: Whereas the SIP and General Readers contain selected information from the Directory, the full Directory is also available. Two software products, GREENTIE floppy disk and GREENTIE on-line, brings this information to the users in a digital format.
- *Newsletter*: GREENTIE distributes a free newsletter called GREENTIMES to update all those concerned with greenhouse gas mitigation on GREENTIE products.

GREENTIE also provides information via thematic publications on technology options and seminars.

Accessibility and Cost

GREENTIE is open to both institutions and individuals. The cost of access to the GREENTIE Directory is only the costs of contact, via telephone, fax, mail or Internet. From March 1995, GREENTIE has been accessible on-line via the Internet which appears to represent an excellent medium through which GREENTIE can disseminate information. The benefits of using Internet are that it provides fast access to the information at virtually no costs. GREENTIE information is available free of charge to anyone with an Internet subscription. Users will only have to identify themselves so that GREENTIE has some idea of who is using the information service. Although the majority of Internet connections can be found in developed countries, this number is now also growing rapidly in the developing countries. Because of the low costs involved, the Internet is becoming an increasingly popular information tool. The current GREENTIE information available via the site is considered to be a prototype for future development. Until now a limited amount of information has been available in the WWW hypertext format. The information currently available via Internet consists of the GREENTIE home page and a number of additional pages concerning:

- GREENTIE activities;
- GREENTIE liaison offices;
- IEA information centres.

After an experimental period, the information set will be expanded. The GREENTIE Directory has been connected and is searchable on-line. Furthermore, the GREENTIMES newsletter is also available via the site. In addition, GREENTIE plans to open a discussion forum, a so-called newsgroup or conference, for exchanging opinions on climate change related technology issues.

Future plans

To fulfill its role as effectively as possible, GREENTIE's product range will

continue to expand. The near future will see the introduction of more products, with more in-depth technology information. GREENTIE has some projects for future products which may be incorporated into their database which could include economic and ecological aspects of the various technologies as well as region or market specific products; but for the moment these remain undecided

Lessons Learned

GREENTIE has been trying to reach out to a wider audience and its entry into the field of electronic communication is one example. GREENTIE is also looking to become more involved with developing countries. However, it faces some restrictions due to its legal status and the implementing agreements which bind it within the IEA and OECD context. Provision of extensive information services to non-IEA countries may be more difficult under the current agreements.

GREENTIE provides for one level of research regarding ESTs relating to energy technologies and greenhouse gasses. This allows the interested user access to another means of information. However, it does not solve the problem of disseminating ESTs nor would it be useful in following-up how effectively the information provided has been used.

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Profiles Of The UNEP Offfices Collaborating In This Survey

INDUSTRY AND ENVIRONMENT (IE)

UNEP's Industry and Environment Office (UNEP IE) was established in Paris in 1975 to bring industry, governments and NGOs together to work towards environmentally sound forms of industrial development. Within this context, IE seeks to (1) build consensus for preventive environmental protection through cleaner, safer production as well as other pro-active approaches; (2) help formulate policies and strategies for sustainable industrial development and facilitate their implementation; (3) define and encourage the incorporation of environmental criteria in industrial development; and (4) stimulate the exchange of information on environmentally sound technologies (ESTs) related to industrial development.

At present, most of IE's activities fall within five key areas:

a) Following various industrial accidents in both highly industrialized and industrializing countries which resulted in adverse impacts on the environment, IE set up the Awareness and Preparedness for Emergencies at Local Level (APELL) Programme in 1988. It assists decision-makers and technical personnel to increase community awareness of the environmental risks associated with hazardous installations and to prepare emergency response plans.

b) The Cleaner Production (CP) Programme was established in 1989 to raise awareness of cleaner products, technologies and production techniques and issues and to help industry and governments develop cleaner production programmes and outreach activities.

c) The OzonAction Programme, established in 1991, acts as the information clearinghouse for the implementation of the Montreal Protocol on substances that deplete the ozone layer. OzonAction gathers and disseminates technical and information, assists in formulating country programmes, and conducts training and networking activities.

d) The Environmental Technology Assessment (EnTA) Programme, run jointly with the International Environmental Technology Centre (Japan), was launched in 1993 to promote the use of technology assessment as a tool to support the development and application of ESTs consistent with sustainable development. It seeks to encourage cleaner production and discourage the export, especially to developing countries, and use of technologies that pose potential environmental hazards.

e) The UNEP Environmentally Sound Technologies Information Network Programme, jointly established with IETC and INFOTERRA in 1996, seeks to foster increased and improved communication between providers and users of *EST* related information throughout the world.

IE currently provides access to information through two information exchange clearinghouses (ICPIC and OAIC), a query-response service, a series of technical publications, a quarterly journal, four newsletters (APELL, CP, ENTA and OzonAction) and through training workshops and seminars.

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INTERNATIONAL ENVIRONMENTAL TECHNOLOGY CENTRE (IETC)

IETC is a new institution created at the request of the UNEP Governing Council. Its offices at two locations in Japan - Osaka and Shiga - officially opened in April 1994. The Centre's main function is to promote cooperation in facilitating the transfer of Environmentally Sound Technologies (ESTs) to developing countries and countries with economies in transition. IETC pays specific attention to urban problems such as sewage, air pollution, solid waste, noise, and to the management of freshwater lake and reservoir basins.

IETC is supported in its operations by two Japanese foundations - the Global Environment Centre Foundation (GEC), which is based in Osaka and deals with urban environmental problems; and the International Lake Environment Committee (ILEC) which is located in Shiga and contributes accumulated knowledge on the sustainable management of freshwater resources.

The Centre's mandate is based on Agenda 21, which came out of the 1992 UN Conference on Environment and Development (UNCED). Consequently, IETC pursues a results-oriented work plan revolving around three issues, namely: (1) Improving access to information on ESTs; (2) Fostering technology cooperation, partnerships and transfer; and (3) Building endogenous capacity.

The Centre's activities are closely coordinated with substantive organizations within the UN system. For example, within the framework of the joint UNCHS (Habitat)/UNEP Sustainable Cities Programme, IETC is promoting the preparation of Local Agenda 21 documents for selected cities. This is complemented by Action Plans focussed on the sustainable management of selected lake/reservoir basins. The Centre has undertaken a range of activities including training needs assessment surveys in the field of decision-making on technology transfer and management of ESTs; design and implementation of pilot training programmes for adoption and operation of ESTs; training materials for technology management of large cities and lake/reservoirs and others. Through the achievement of these results IETC has rapidly established itself as a Centre of Excellence in the field of EST transfer. In order to build on these achievements, IETC has jointly established the UNEP EST Information Network Programme and is developing stronger partnerships with international and bilateral finance institutions, technical assistance organizations, the private, academic and non-government sectors. IETC also publishes a quarterly newsletter; a technical publication series and other media materials creating public awareness and disseminating information on ESTs.

At present, IETC staff includes seven internationally recruited professionals, four cooperating staff from GEC and ILEC, and nine local support staff members. An International Advisory Board (IAB) has been established to provide policy-level advice on IETC's strategy and the orientation of its programme to the Executive Director of UNEP.

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INFOTERRA

The Stockholm Conference on the Human Environment, convened by the United Nations in 1972 to consider the state of the environment, called for an international mechanism for the exchange of environmental information. This resulted in the UNEP Governing Council establishing the International Referral Systems (IRS) in 1975, later renamed INFOTERRA - the Global Environmental Information Exchange Network. The main direction given to INFOTERRA was to develop a mechanism to "facilitate the exchange of environmental information within and among nations."

Operational activities began in 1977 with cooperation from a dozen partner countries. From the start, INFOTERRA functioned as a decentralized information system operating through a worldwide network of national environmental institutions designated and supported by their governments as national focal points and coordinated by a programme activity centre at UNEP Headquarters in Nairobi, Kenya. The focal points are generally situated in information and documentation sections of environment ministries and national environmental protection agencies. They act as primary access points through which queries from users are channelled to INFOTERRA sources and through which users receive their replies.

As environmental problems increase in complexity and specialized scientific knowledge proliferates, there is an ever increasing need by network users for substantive information tailored to particular needs in specialized areas of concern. Certain organizations are generally recognized as being leaders in particular fields of expertise, and INFOTERRA has identified environmental priority areas within which 34 such centres of excellence (these are called sectoral sources) provide highly specialized scientific responses to user queries.

In support of these networking activities, INFOTERRA has developed the International Directory of Sources, often referred to as the INFOTERRA database. This facility provides the user with access to over 7,000 sources of information on over 1,000 environmental subjects. INFOTERRA also periodically publishes specialized directories and sourcebooks, the Thesaurus of Environmental Terms, Operation Manuals and the INFOTERRA bulletin.

Now part of the UNEP Division of Environmental Information and Assessment, INFOTERRA has worked closely with IE and IETC on the survey of information systems related to environmentally sound technologies (EST) and is jointly responsible for the planning, management and implementation of the new UNEP Environmentally Sound Technology Information Network Programme.

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