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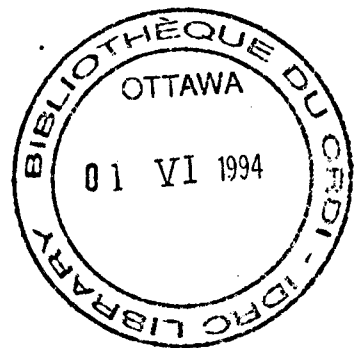
Final Report

Indigenous Knowledge Systems and Sustainable Development

IDRC Program Development

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TABLE OF CONTENTS

	<u>PAGE</u>
Executive Summary	4
1.0 Introduction	13
1.1 Traditional Ecological Knowledge and Indigenous Knowledge Defined	13
1.2 Study Methodology	14
2.0 Recommended Program Entry Points for Strengthening the Role and Capabilities of Indigenous People in Canada and Abroad	15
2.1 Potential Entry Points for TEK-Related Research Activities	15
2.2 Potential Entry Points for Concrete Experiments in Community-Based Resource Management Activities	21
2.3 Potential Entry Points for TEK-Related Networking and Database Application Activities	23
2.4 Potential Entry Points for Integrating TEK in Resource Management Policy Formulation and Implementation Strategies	28
2.5 Next Steps	34

Appendices

- 1 - Analysis of IDRC's Strategic Interests with TEK-Related Research**
- 2 - Past and Current IDRC Initiatives for Empowering Indigenous Peoples in Canada and Abroad**
- 3 - Recent Canadian and International TEK-Related Meetings**
- 4 - Activities and Major Participants Involved in TEK-Related Research in Canada and Abroad**
- 5 - Major IK Networks and Resource Centres**
- 6 - Current Bibliography of Applied TEK in Biodiversity Conservation and Resource Management Practices**

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EXECUTIVE SUMMARY

This report represents another step in IDRC's on-going efforts to explore the potential of indigenous knowledge (IK) systems alone and integrated with science, to help define viable, grass-roots sustainable resource management strategies. As the practical and scientific importance of understanding IK or traditional ecological knowledge (TEK) systems has dramatically increased over the last five to ten years, so has the complexity of the issue and the number of multi-stakeholder interests.

The first task in this research study was to develop a "strategic traditional ecological knowledge (TEK) framework" which analyses: i/ the current participants and results of recent TEK-related meetings held in Canada and abroad; and, ii/ IDRC's comparative advantages and specific pro-active policy initiatives involving indigenous knowledge (TEK) and a community participatory approach to sustainable resource management strategies (e.g., follow-up to Agenda 21 and the UN Year of Indigenous Peoples').

The second and most important task was to use the "strategic TEK framework" to help define a program "niche" for the Centre's present and future programming efforts with TEK. A series of general and specific recommendations on potential IDRC collaboration and networking with partners in Canada and abroad, were suggested as summarized by the following entry points.

I) Potential Entry Points for TEK-Related Research Activities

a. Centre for Development Cooperation Services

CDCS is planning a second phase of a joint research program which will focus on an in-depth analysis of the most promising African soil and water conservation (SWC) techniques and experiments to improve the efficiency of specific techniques or testing their transfer to other similar regions.

Potential IDRC Entry Point

CDCS has expressed strong interest in exploring avenues for collaborating with IDRC, including the possibility for IDRC to co-fund the second phase of research.

b. Centre for Nutrition and the Environment of Indigenous Peoples (CINE)

CINE is a community-based research and education resource to provide indigenous peoples with useful and useable information on the inter-relationships between nutrition and the environment.

Potential IDRC Entry Point

Although CINE has a strong focus with indigenous peoples' organizations in Canada, they plan to extend the scope of their activities to other parts of the world as funding becomes available. IDRC's current work with the Assembly of First Nations (AFN) and the Mohawk Council of Akwesasne could be useful in determining the scope of activity and international partners which may warrant future IDRC support for a research project on this issue.

c. **Manitoba Keewatinowi Okimakanak**

Work is now underway to develop a permanent First Nations capacity to link TEK and GIS to environmental assessment and monitoring with a sampling and laboratory analysis program directed and operated by aboriginal people in northern Manitoba.

Potential IDRC Entry Point

MKO represents one of the first Band communities to develop their own capacity for GIS to help them respond to potential impacts and opportunities related to non-native development and resource management activities. The experiences with this new technology and training requirements could be used to design a future IDRC research project to evaluate the efficacy of various information technologies currently in use by First Nations in Canada and abroad.

II) **Potential Entry Points for Concrete Experiments in Community-Based Resource Management Activities**

a. **Environment Canada**

The Action on Water program (Green Plan) involves aboriginal people in a water quality/quantity monitoring network and management of water in northern lakes and rivers. Of particular relevance to IDRC's comparative advantage is the Effects to Aboriginals from the Great Lakes Environment (E.A.G.L.E.) Network which includes the Great Lakes Environmental Impacts on Native Health Study project.

Potential IDRC Entry Point

The results of this project (along with the experience of the Split Lake Band Water Quality Testing Capability project) could be applied by IDRC's Health and ENR divisions to

similar circumstances in developing countries where local training for water quality monitoring is a development priority for rural indigenous peoples.

b. Plenty Canada

Canadian Jobs Strategy (Employment and Immigration) and the Six Nations Area Management Board have recently approved funding to Plenty Canada to establish an innovative project that will identify and assess agricultural training needs for social assistance and unemployment insurance recipients in the Hamilton/Wentworth and Six Nations/New Credit communities of Ontario.

Potential IDRC Entry Point

This project was designed by a First Nations Native from Peru (Jose Zarate), and aimed to apply Plenty Canada's developing country experience of tapping indigenous peoples agricultural experience to an appropriate Canadian context. IDRC should monitor the status of this pilot project to determine the viability of a similar future project in another indigenous community in the South.

c. World Wide Fund for Nature/UNESCO/MAB/Royal Botanic Gardens

The "People and Plants Programme: Ethnobotany and the Sustainable Use of Plant Resources" pools the expertise and strengths of three major conservation and biodiversity related institutions. The results of the extensive research activities will be developed into technical guidance handbooks based on TEK.

Potential IDRC Entry Point

IDRC should monitor the progress of this initiative (the TEK/ Museum of Nature Program has connections through UNESCO) with a view to future involvement with the above technical guidance handbooks for the development of possible future indigenous capacity building activities.

III) Potential Entry Points for TEK-Related Networking and Database Application Activities

a. Centre for Indigenous Environment and Development and Darien Information Systems

When completed, CIED and the International Conservation Software (ICONS) data management system will allow indigenous and non-indigenous users to easily and inexpensively import and export text files containing environmental and social information.

Potential IDRC Entry Point

CIED is currently looking for partners to help them complete the ICONS project to build software which is accessible and easy to use. It is recommended that IDRC investigate this technology further and consider future partnership with the TEK/Museum of Nature and Canada MAB and possibly, the European Centre for Research, Experimentation and Learning for the Knowledge Age (NEUROPE LAB: JITOL).

b. Society for Research and Initiatives for Sustainable Technologies and Institutions

Potential IDRC Entry Point

See details of SRISTI's approved proposal to IDRC in Appendix 2.

c. UNDP Sustainable Development Network Program

By June 1993, 20 to 25 governments has been given access to the Sustainable Development Network (SDN); by the end of 1993, as many as 50 governments are expected to be linked to the network.

Potential IDRC Entry Point

IDRC should continue their support for SDN (i.e., helping to designate a starter kit for each network country which includes compatible hardware and software) as the network develops into a "network of networks", effort should be taken to ensure that SDN does not duplicate cost-effective activities already in place.

d. UNESCO/Canada MAB and the Canadian Museum of Nature (International Program for Traditional Ecological Knowledge)

The TEK Program is currently involved in an International Advisory Board on TEK and other networking activities with partnerships being developed with a broad range of agencies and organizations worldwide. Work continues on the publication of a Source Book on TEK, the preparation of a computerized TEK database and investigation into the multi-media software TEK application (AXIA).

Potential IDRC Entry Point

Program support could help at strengthening and consolidating the recent partnership with the Museum of Nature and provide IDRC with a locally-based, established network partner.

IV) Potential Entry Points for Integrating TEK in Resource Management Policy Formulation and Implementation Strategies

a. Centre for Plant Breeding and Reproduction Research

CPRO is currently submitting a research proposal for IDRC funding for the "Community Biodiversity Development and Conservation Programme" which is at the project formulation and partner/location identification stages. A working document for the exploratory phase and proposal to the donors was sent out to future partners, donors and others interested in the programme.

Potential IDRC Entry Point

This programme represents a model specialization within the networks on local, indigenous knowledge systems which could further define IDRC's policy and prospective partners on the issue of Domesticated Biodiversity and TEK.

b. Indigenous Peoples Fund

Formally established by twenty Ibero/Latin American countries in Madrid (July/92), it is designed to provide direct access funding to about 40 million indigenous peoples, speaking some 400 languages, in the Atlantic region.

Potential IDRC Entry Point

IDRC, through its international network should find out more about this recent initiative which could serve as a model on how the Centre can influence the implementation of this Fund in a manner which empowers indigenous peoples and recognizes the potential value of TEK systems in sustainable development.

c. **International Institute for Environment and Development**

IIED's Drylands and Pastoral Land Tenure Programme analyses the key role played by the Barabaig and Kisongo Maasai pastoralists in sustainable African land use tenure systems that incorporate effective traditional arrangements with new administrative structures. This programme is also designed to increase the local capacity to represent their own interests in policy making.

Potential IDRC Entry Point

This project provides a good entry point for IDRC to learn more about the relationship between traditional common property land use tenure systems and the implementation of resource co-management administrative structures.

d. **Partnership Africa Canada (Seeds of Survival Program).**

The program is now entering a five year second phase which will lead to complete local control of the program. USC Canada has developed an educational classroom kit on the Seeds of Survival Program which is now being used in many local school programs across Canada.

Potential IDRC Entry Point

This consortium-led innovative strategy to promote genetic conservation in Africa, along with its educational and training focus in both Africa and Canada, provides a good model that IDRC can become directly involved with (i.e., phase 2) or duplicate for another region such as South America.

e. **World Conservation Union**

IUCN is organizing various TEK-related meetings that IUCN is organizing in the near future with Indigenous Survival International may help to consolidate and expand existing TEK networks through various high-level workshops; the creation of case-studies, and the development of strategic policy guidelines for integrating TEK more effectively in planning.

Potential IDRC Entry Point

It is recommended that the Centre monitor IUCN's activities in this area and obtain copies of various discussion papers and case-studies. These outputs could provide useful information to help the Centre to further define their TEK program and to engage in increased networking with TEK institutions with similar interests to IDRC.

1.0 Introduction

Over the last five to ten years (particularly in regard to UNCED and Agenda 21 follow-up), there has been growing interest in using indigenous knowledge (IK) as an integral part of planning and participatory decision-making for the wise use of resources and the environment. Along with this growing recognition of the potential value of IK systems, there are also a large number of multi-stakeholders with a variety of strategic interests that are often duplicating effort or needlessly competing against each other. This report attempts to clarify the Centre's "niche" on this issue, by providing recommended programming entry points through collaboration with partners in Canada and abroad that address IDRC's strategic TEK interests.

1.1 TEK and IK Defined

A variety of terms and definitions have recently come into use by anthropologists, ethnologists/botanists, as well as the media, to try to capture the unique and intimate relationship that has long existed between indigenous peoples' and their local environment. A comparison between the western scientific and indigenous knowledge paradigms is provided by Wolfe et. al. (1991) in Figure 1. In the context of this research study, the terms traditional ecological knowledge (TEK) and indigenous knowledge (IK) are used synonymously.

Traditional Ecological Knowledge is defined by Johnson (1992) as:

"a body of knowledge built up by a group of people through generations of living in close contact with nature. It includes a system of classification, a set of empirical observations about the local environment, and a system of self-management that governs resource use. TEK is both cumulative and dynamic, building upon the experience of earlier generations and adapting to the new technological and socio-economic changes of the present."

Figure 1

SOME COMPARISONS BETWEEN INDIGENOUS KNOWLEDGE
AND
WESTERN SCIENTIFIC KNOWLEDGE

	INDIGENOUS KNOWLEDGE	WESTERN SCIENTIFIC KNOWLEDGE
Relationship	Subordinate	Dominant
Dominant Mode of Thinking	Intuitive	Analytical
Communication	Oral	Literate
	Teaching through doing and story-telling	Didactic
Characteristics	Holistic	Reductionist
	Subjective	Objective
	Experiential	Positivist
Effectiveness		
Data Creation	Slow/Inclusive	Fast/Selective
Prediction	Short-term cycles	Short-term linear
	Recognizes the onset of long-term cycles	Poor long-term prediction
Explanation	Spiritual - Includes the Inexplicable	Scientific Hypotheses Theory and Laws
Classification	***	***
Biological Classification	Ecological	Genetic and Hierarchical
	Inclusive - internally differentiating	Differentiating

Indigenous Knowledge is defined by Warren (1989) as:

"knowledge (information base) that is unique to a given culture or society - codified in the language of the society, it changes through indigenous creativity and innovativeness, as well as through contact with other knowledge systems."

1.2 Study Methodology

Much of this report is based on secondary research information in order to define the most important and current TEK-related research activities as reflected by both the literature (based on personal and IDRC library information holdings, staff files on current and past TEK projects and Corporate policy documents), and from personal communications with some of the key members of the current TEK research community. Other valuable and timely information was made available through: Ray Obomsawin's May, 1993 CIDA report: "Culture Based Knowledge Systems In Development: Securing the Foundations for a Sustainable Future"; through current files and interviews with Julian Inglis and Jim Bourque of the ECO-ED/Traditional Knowledge Program at the Museum of Nature; and from reviewing the correspondence files of Pierre Richard (CIDA) that were generated from Dr. Obomsawin's above report.

Many of the general recommendations were synthesized from recent TEK meetings (e.g. the Philippines IK Symposium and others as cited in Appendix 3); the specific recommendations represent the consultants best judgement as to which current Canadian and international projects and programmes warrant IDRC consideration for future collaboration and/or funding support.

2.0 Recommended Program Entry Points for Strengthening the Role and Capabilities of Indigenous People in Canada and Abroad

The ultimate objective of any intervention or change by IDRC would be to promote a program which effectively strengthens the role and capability of indigenous people in Canada and elsewhere. Keeping in mind that it is not possible for any single study to provide step-by-step definitive entry points that will define a TEK program (niche) for an institution the size of IDRC, the following entry points have been selected from a larger list of current TEK-related activities (Appendix 4) that appear to best address IDRC's strategic interests and comparative advantages.

2.1 Potential Entry Points for TEK-Related Research Activities

1/ General Recommendations

- a. TEK researchers should ideally be from local communities and if not possible, non-indigenous collaborators should have cross-cultural awareness, empathy and respect for local cultures/protocols at all phases of research.
- b. Wherever possible, TEK research should be done by multidisciplinary teams with view to obtaining: a gender perspective (e.g., traditional women farmers often play a decisive role in the selection, improvement and management of crop diversity), and the perspective of generation (e.g., elders as key informants), and occupational role.

2/ Major TEK Research Gaps

- a. More research is needed to determine the impact of new constraining circumstances on TEK and the flexibility and adaptability of TEK under pressure. Such research could focus on the inter-relationships between aspects of TEK that can serve as indicators of environmental degradation and community nutritional strategies.
- b. More research is needed to better understand indigenous communication channels (and the use of indigenous languages in their application in sustainable development strategies (e.g., a research survey should be undertaken to assess the extent and success to which indigenous peoples in Canada and abroad utilize geographical information and communication technologies).
- c. More research and the development of translated manuals (e.g., written word, by pictures, audio and visual recording) is needed to refine and standardize research methodologies for documenting and educating of TEK systems - particularly the most vulnerable aspects of TEK which may involve intellectual property rights, trade secrets or cultural taboos.
- d. More research is needed to better understand the inter-relationships between indigenous customary laws or norms and indigenous medicine (e.g., primary and holistic health care, indigenous nutrition and midwifery) and related environmental health and management practices. Potential ethical conflicts with integrating aspects of ethnobotany and modern medicine (pharmacology) warrant particular attention.
- e. More research support should be given to the technical and policy issues related to the potential impact of biotechnology on biodiversity including: biosafety policies to ensure

that introduced genetically altered organisms and their products into the environment is done in an ethical and safe manner; improved access and transfer of biotechnologies that are relevant to conservation and sustainable use of biological diversity; research on positive incentives for the conservation and practical use of genetic resources as a source of germplasm; and research on the influence that patents and other intellectual property rights may have on the implementation of the Biodiversity Convention.

- f. More research is needed to better understand the misuse of pesticides - chemicals by indigenous peoples and methods to better inform them about their environmental health impact, including possible alternatives involving indigenous/scientific methods for integrated pest control, soil and water conservation techniques and plant pathology.
- g. More comparative research is needed to better understand the practical/economic utility of the use of TEK for indigenous innovations that can be transferred from one ecological zone to a similar zone in other parts of the world (such research could be initiated by IDRC through the awarding of fellowships, awards, internships and academic scholarships).
- h. Socialization studies are needed to better understand the mechanisms of cultural transmission of the users/keepers of TEK to younger generations (e.g., use of "memory banks").

3/ Potential TEK Research Constraints

- a. Even if IDRC's understanding of TEK systems substantially increases over the next few years, the practical use of this knowledge may still be hampered by institutional

constraints such as the inappropriateness of present project design and the tendency of governments and donor agencies to go for quick and tangible results. For example, it may even be possible that IDRC's recently adopted policy for supporting larger funded projects may serve to limit its effective involvement in small community-based TEK projects.

- b. Governments, donor agencies and the media often want quick and tangible results to report back to constituents and the public. TEK systems in general, are still not very well understood and require further research. It can take 3-5 years of experimentation to improve the technical efficiency of indigenous innovation (i.e., several techniques should be tested and evaluated by scientists and community members), hence implementation results can rarely be obtained before 5-10 years have elapsed. It is essential that these time frames be accepted and factored into TEK research initiatives.
- c. Another related constraint is that indigenous innovations, which are successful in specific regions will be transferred to other regions without adequate testing or adaptive research. This could lead to introduced practices which are culturally inappropriate or ecologically disrupting.

4/ Specific Entry Point Recommendations

- a. **Centre for Development Cooperation Services (Joint Research Program on Indigenous Soil and Water Conservation (SWC) in Africa with IIED and Natural Resource Management Group of the Vrije University in the Netherlands)**

CDCS is planning a second phase of the above joint research program which will focus on a more in-depth analysis of most promising African (identified in phase 1) SWC techniques and

experiments to improve the efficiency of specific techniques or testing their transfer to other similar regions.

Potential IDRC Entry Point

CDCS has expressed strong interest in exploring avenues for collaborating with IDRC, including the possibility for IDRC to co-fund the second phase of research (described in earlier draft).

Possible partners for this potential ENR initiative could include the Information Centre for Low-External Input and Sustainable Agriculture; the International Federation of Organic Agricultural Movements and the International Institute of Tropical Agriculture.

b. Centre for Nutrition and the Environment of Indigenous Peoples (CINE)

CINE is a community-based research and education resource to provide indigenous peoples with useful and useable information on the inter-relationship between nutrition and the environment.

Potential IDRC Entry Point

Although CINE has a focus with indigenous peoples in Canada (i.e., the Governing Board is represented by organizations comprising the Dene; the Metis; and the Inuit), they plan to extend the scope of their activities to other parts of the world as funding becomes available. In this regard, IDRC's current work with the AFN and the Mohawk Council of Akwesasne (appendix 2) could be useful at determining the scope of activity and international partners which may warrant subsequent funding for a research project on this issue.

Possible partners for this potential Health Sciences initiative could involve the Information Centre for Low-External Input and Sustainable Agriculture; the Centre for Development Cooperation Services; and the Association for Farming Systems Research and Extension.

c. Manitoba Keewatinowi Okimakanak

Work is now underway to develop a permanent First Nations capacity to link TEK and GIS to environmental assessment and monitoring with a sampling and laboratory analysis program directed and operated by aboriginal people in northern Manitoba. However, it is understood that there have been some technical and logistical problems in the development of GIS map overlays using TEK which has contributed to delays in the Hudson Bay Bio-region Study (CARC). This suggests that this field-level use of GIS technology may have some technical and human limitations at this time.

Potential IDRC Entry Point

MKO represents one of the first Band communities to develop their own capacity for GIS to help them respond to potential impacts and opportunities related non-native development and resource management activities. The experiences with this new technology and training requirements could form the basis for a future IDRC research project to properly assess the various information technologies currently in use by First Nations in Canada and abroad (e.g., the relative advantages between the various GIS technologies and Desktop Mapping Systems as presented at the Peterborough TEK and Information Technologies Workshop).

Possible Canadian partners could involve the Omushkegowuk Harvesters Association; the Canadian Arctic Resources Committee; the Dene Cultural Institute; the Canadian Polar Commission; the Federal Environmental Assessment Review Office/Environment Canada, as well as the academic community and private industry.

2.2 Potential Entry Points for Concrete Experiments in Community-Based Resource Management Activities

1/ Specific Entry Point Recommendations

a. Environment Canada (Green Plan)

The Action on Water program involves aboriginal people in a water quality/quantity monitoring network and management of water in northern lakes and rivers. Of particular relevance to IDRC's comparative advantage is the Effects to Aboriginals from the Great Lakes Environment (E.A.G.L.E.) Network. This network which includes the Great Lakes Environmental Impacts on Native Health Study project (a five year initiative funded by Health and Welfare in partnership with the AFN). An AFN biochemist is to determine (through water sampling and interviews with native communities) the issue of health effects due to exposure to contaminants in the Great Lakes.

Potential IDRC Entry Point

The results of this project (along with the experience of the Split Lake Band Water Quality Testing Capability project) could be applied by IDRC's Health and ENR divisions to

similar circumstances in developing countries where local training for water quality monitoring is a development priority for rural indigenous people.

Possible partners could include the experience of the National Water Research Institute and the International Institute for Sustainable Development.

b. Plenty Canada

Canadian Jobs Strategy (Employment and Immigration) and the Six Nations Area Management Board have recently approved funding to Plenty Canada to establish an innovative project that will identify and assess agricultural training needs for social assistance and unemployment insurance recipients in the Hamilton/Wentworth and Six Nations/New Credit communities of Ontario. The 12 month project will determine the potential demand for agricultural-oriented job training, while helping participants to break the cycle of poverty by establishing a locally-run agricultural training cooperative.

Potential IDRC Entry Point

This project, designed by a First Nations Native from Peru (Jose Zarate), is aimed at applying Plenty Canada's developing country indigenous peoples agricultural experience to an appropriate Canadian context. IDRC should monitor the status of this project to determine if it may be appropriate to duplicate this project in the future for the South, in partnership with an indigenous community in Canada.

c. World Wide Fund for Nature/UNESCO/MAB/Royal Botanic Gardens

The "People and Plants Programme: Ethnobotany and the Sustainable Use of Plant Resources" is an innovative project which pools the expertise and strengths of three major conservation and biodiversity related institutions. The results of the extensive research activities will be developed into a series of technical guidance handbooks on: i/ Ethnobotany and Plant Conservation; ii/ Harvesting of Wild Plants; iii/ Plant Invaders: The Threat to Natural Ecosystems Worldwide; iv/ Databases for the Conservation of Plants; and, v/ Selection of Priority Sites for Plant Species Conservation.

Potential IDRC Entry Point

IDRC should monitor the progress of this initiative with a view to future involvement in, or just obtaining, the above technical guidance handbooks for the development of possible future indigenous training initiatives.

Other possible partners could be the Indigenous Food Plants Programme and the International Board for Plant Genetic Resources.

2.3 Potential Entry Points for TEK-Related Networking and Database Application Activities

1/ General Recommendations

- a. Technology and training requirements for database networking and systems compatible in the North and South, as well, technology for rural areas in developing countries

should be able to function adequately in potentially difficult conditions (e.g., power failures/brown-outs, lack of maintenance and spare parts).

- b. Database technology for capture of TEK should include the development of a framework for improving the information base, so as to make it more responsive to indigenous peoples needs, priorities and rights.

2/ **Specific Entry Point Recommendations**

a. **Centre for Indigenous Environment and Development and Darien Information Systems**

When completed, the International Conservation (ICONS) data management system will allow network users to easily and inexpensively import and export text files containing environmental and social information (e.g., conservation and traditional knowledge is currently organized into 7 modules). ICONS will also make it easy for users to share information by trading files stored on computer diskettes; by working collectively on electronic local area networks; by using electronic mail to send files to remote partners and by printing the information where electronic access is limited.

Potential IDRC Entry Point

CIED is currently looking for partners to help them complete the ICONS project to build software which is accessible and easy to use (i.e., the scope of the initial software and database products will depend on the numbers of partners and funding). This data management system appears to have more advantages for use in developing countries and operated by indigenous communities, than the AXIA multimedia system (although the multimedia system has excellent

potential as a learning and TEK capture tool for biodiversity). It is recommended that IDRC investigate this technology further with possible future partnership support with the TEK/Museum of Nature and Canada MAB and possibly, the European Centre for Research, Experimentation and Learning for the Knowledge Age (NEUROPE LAB: JITOL).

b. Society for Research and Initiatives for Sustainable Technologies and Institutions
(Included with Honey Bee at the Indian Institute of Management)

The key objectives of SRISTI are to strengthen the capacity of grassroots level innovators and inventors engaged in conserving biodiversity to: i/ protect their intellectual property rights; ii/ experiment to add value to their knowledge; iii/ evolve entrepreneurial ability to generate returns from this knowledge and, iv/ enrich their cultural and institutional basis of dealing with nature (see Appendix 2 for objectives of approved SRISTI proposal to IDRC).

c. UNDP Sustainable Development Network Program

At the national level, SDN initial plans will be on building up a database of all relevant technical and socio-economic activities in the country in question, whether nationally or externally funded. SDN plans to have 13 national and 3 SDN's established by June 1993, giving 20 to 25 governments access to SDNs. It is also expected that by the end of 1993, as many as 50 governments are expected to be linked to the network.

Potential IDRC Entry Point

IDRC should continue their support for SDN (i.e., helping to designate a starter kit for each network country which includes compatible hardware and software) as the network develops

into a "network of networks", effort should be taken to ensure that SDN does not duplicate cost-effective activities already in place.

Possible partners could eventually include all of the recently established IK Resource Centres (i.e., CIRAN; CIKARD; LEAD), the IK Regional and National Centres (ARCIK; REPPIKA; GHARCIK; KENRIK; INRIK; PHIRCSDIK; SLARCIK and RIDSKA), as well as other network/institutions as mentioned above.

**d. UNESCO/Canada MAB and the Canadian Museum of Nature
(International Program for Traditional Ecological Knowledge)**

This program (which grew out of the Winnipeg IK Workshop and ECO-ED program), was established in January 93 and is supported in part through grants from the Government of Canada, UNESCO and IDRC. The TEK Program is currently involved in an International Advisory Board on TEK and other networking activities with partnerships being developed with a broad range of agencies and organizations worldwide.

Networking is partly achieved by the participation of the two principals in various TEK-related meetings and policy initiatives (e.g., Jim Bourque as Chairman of a Task Force on the position of Canadian aboriginal groups on the Canadian fur industry compliance to pending European anti leg-hold trap legislation; and Chair of the NWT Natural Resources Trust Fund). Work continues on a strategic plan, the publication of a Source Book on TEK, the preparation of a computerized database, investigation of the multi-media software TEK application (AXIA).

The Canadian Museum of Nature

As part of recent cost-cutting and program restructuring, increased emphasis will be put on biodiversity issues (Canadian Centre for Biodiversity) in order to provide a "symbiotic" link with the TEK/UNESCO program (e.g., Don McAllister's publication of a subscription newsletter "Ocean Voice" may in future contain TEK-related articles on biodiversity as developed by the TEK Program).

The Museum (with advice from the TEK Program) is currently planning to stage an Elders, Scientists and Youth Conference for October 1993 in Squamish, B.C. The original idea was to develop mechanisms by which the natural sciences (as expressed through the Museum of Nature's programs and exhibitions) could work more harmoniously with TEK. These mechanisms would be developed in an environment where young people would listen and speak with Elders, and members of the scientific community to help provide a better understanding and respect for TEK and Nature.

Potential IDRC Entry Point

Although long-term funding and administrative arrangements with the Museum of Nature may not be guaranteed, the TEK Program appears to be well-positioned (i.e., the Hon. Jim Bourque - former Deputy Minister of Dept. of Renewable Resources in GNWT was appointed to the newly created Chair of the TEK Program in Jan./93 with Julian Inglis as Program Director) and well respected by the Canadian and international indigenous TEK research network. Being situated in Ottawa, the TEK Program could provide IDRC with a convenient link and representation to the Canadian and international TEK network. A program support standing

offer could help strengthen and consolidate the institutional strength of the recent partnership with the Museum of Nature.

2.4 Potential Entry Points for Integrating TEK in Resource Management Policy Formulation and Implementation Strategies

1/ General Recommendations

- a. To allow for effective networking among the plethora of researchers working with IK systems, an individual/organization-based International Association of Indigenous Knowledge System Researchers and Practitioners should be formed that could be accessed by anyone wishing to conduct consultative assignments that relate to indigenous peoples and their knowledge systems. This measure could also include the establishment of a coordinative International Secretariat Office with an adequate and politically neutral funding base.
- b. A symposium or series of Workshops should be held annually at least until 1995, after which could be held every two years or merged with another issue such as human rights and biodiversity issues). The international forum should maintain a policy development and implementation status focus, and should involve the full participation of key influential native and non-native individuals and organizations.
- c. Systematic and coordinated efforts should be taken to help development and education authorities in the developing world and Canada to ensure that the accumulating body of experience and documentation of IK systems is accurately recorded and incorporated into

formal and informal textbooks and other multi-media teaching aides (this is particularly urgent where TEK is eroding or in danger of being irreversibly lost).

- d. In full consultation with widely representative indigenous peoples' organizations, appropriate national and international procedural and legal conventions should be established with effective mechanisms for enforcement to ensure that ownership rights are honoured and equitable recognition and compensation is provided for local knowledge strategies, products and resources - particularly as they relate to cultural sustainability measures for the conservation of biological diversity.
- e. Some of the concern in protecting indigenous farmers' and herbal medicinal practitioners intellectual property rights, relates to the role played by gene banks and herbariums to protect the farmer and his/her "landraces" (folkseeds or farmers' varieties). Policy direction is needed to articulate the point that genetic resources or germplasm are not the "raw material" for biotechnology, rather it is the intellectual contribution of informal innovators that is in danger of being misappropriated by transnational pharmaceutical and biotechnology companies.

2/ Specific Entry Point Recommendations

a. Centre for Plant Breeding and Reproduction Research

CPRO is currently submitting a research proposal for IDRC funding for the "Community Biodiversity Development and Conservation Programme" which is at the project formulation and partner/location identification stages. A working document for the exploratory phase and

proposal to the donors (scheduled to be published in May/93) was sent out to future partners, donors and others interested in the programme on the objectives, technical and scientific requirements, protocol and programme structure.

Potential IDRC Entry Point

This programme and its prospective partners (CLADES; ENDA Zimbabwe; GRAIN; NORAGRIC; Plant Genetic Resources Centre/Ethiopia; RAFI and SEARICE) represents a model specialization within the networks on local/indigenous knowledge which could be very useful at further defining IDRC's policy and partners on the issue of Domesticated Biodiversity and TEK.

b. Indigenous Peoples Fund

Formally established by twenty Ibero/Latin American countries in Madrid (July/92), it is designed to provide direct access funding to about 40 million indigenous peoples, speaking some 400 languages, in the Atlantic region. The Fund's General Assembly and the Board of Directors will have equal representation of governments and indigenous peoples of each regional member state, as well as representatives of extra-regional governments to ensure the tripartite nature of the Fund.

Potential IDRC Entry Point

IDRC, through its international partners should try to find out more about this recent initiative and if possible, the Centre should try to influence the implementation of this Fund in a manner which empowers indigenous peoples and recognizes the potential value of TEK systems in sustainable development (the same action should be taken with the Global Environmental Facility).

c. International Institute for Environment and Development

IIED's research project (Drylands and Pastoral Land Tenure Programme) looks into the key role played by the Barabaig and Kisongo Maasai pastoralists in sustainable African land tenure systems as a basis for designing sustainable land use plans that effectively incorporate traditional arrangements with new administrative structures. This programme is also designed to increase the local capacity to represent their own interests in policy making processes (e.g., IIED is pursuing the possibility of forming a "pastoralists pressure group" to try and influence policy-makers and practitioners in northern NGOs.

Potential IDRC Entry Point

This project provides a potential entry point for IDRC to learn more about the relationship between traditional common property land tenure systems in Africa and the implementation of resource co-management administrative structures. Involvement in this project could also help improve Canada's development record in terms of previous negative media publicity of the CIDA Tanzanian Wheat Farm project (Citizen article May 22/93) and the recent cancellation of the Hanang Community Development Project. Such research could also have relevance to Canadian indigenous people who operate on similar land tenure or co-management models.

Other potential partners include: CIDA; the UN Research Institute for Social Development; the World Conservation Union; the World Wide Fund for Nature; the International Association for the Study of Common Property, and the World Resources Institute.

d. **Partnership Africa Canada** (consortium of: USC Canada; InterPares; Rural Advancement Foundation International; and Oxfam Quebec)): Seeds of Survival Program.

The Program is working with the Plant Genetic Resources Centre in Addis Ababa to help increase the understanding of the important role indigenous farmers play in food security. A main component in this Program is the Indigenous Farmer Based Seed Improvement initiative which includes the following three sub-elements:

- i/ A Farmer/Breeder Land Race initiative to help restore and breed traditional seed crops or "landraces" which were lost and consumed during the Ethiopian droughts. Working cooperatively with the indigenous farmers, scientists from PGRC are helping to train local staff to identify superior qualities in the restored seed for rapid farmer breeding (expected to increase local yields by 5 % per annum);
- ii/ The training of NGO rural animateurs from across Africa at the PGRc (e.g., a one month program will emphasize seed collection, simple storage methods, documentation and farmer/breeder strategies as described above; and,
- iii/ To make available African technical advisors in seed-saving and plant breeding to advise NGOs on their on-site program activities.

The initial three year first phase has just completed the local training, the program is now entering a five year second phase which will lead to the final institutionalization (local control) of the program. In addition to conducting an extensive development education effort, USC Canada has developed an educational classroom kit on the Seeds of Survival Program which is now being used across Canada in many local school programs. This is the only Canadian-based initiative providing development education resources for Canadian youth which positively

portrays the intrinsic value of IK knowledge systems as a practical resource to Canada and the world.

Potential IDRC Entry Point

This consortium-led innovative strategy to promote genetic conservation in Africa, along with its educational and training focus in both Africa and Canada, provides a good model that IDRC may become directly involved with (i.e., phase 2) or duplicate for another region such as South America.

e. World Conservation Union

The various TEK-related meetings that IUCN is organizing in the near future with Indigenous Survival International will serve to consolidate and expand TEK networks through various high-level Workshops; creation of case-studies, and the development of strategic policy guidelines for more effectively integrating TEK in all phases of development planning.

Potential IDRC Entry Point

While it may not be highly recommended that IDRC support these upcoming TEK meetings, it would be useful for the Centre to monitor IUCN's activities in this area and to obtain copies of the discussion papers, case-studies and the strategic guide. These outputs could help the Centre to further define their TEK program and to engage in increased networking with TEK institutions with similar interests to IDRC.

2.5 Next Steps

- i/ During my interviewing of IDRC staff involved with IK issues, it was apparent that there has been much debate going on with this topic within the Centre since UNCED and follow-up planning for Agenda 21. While it is important not to "romanticize" this issue, it is also important for IDRC to continue and expand consultation and coordination within the Centre, its Regional Offices and through its long-term research partners (e.g., the current IDRC TEK/Biodiversity Working Group model should include other relevant issues such as environmental health and economy and should in future, be expanded to other agencies such as CIDA and External Affairs.
- ii/ Increased networking with the wider TEK community in Canada and abroad is also urgently needed to identify and mobilize funding sources to continue necessary research, advocacy and networking. In other words, IDRC should continue to play an important role at promoting and building on the momentum that has been achieved over the last few years on what is fast becoming a multidisciplinary issue which promises to become even more important to development research in the short and long-term future.
- iii/ IDRC (particularly through the Canadian Partnership Program, as well as the ENR and ISSD Divisions) should expand partnerships which promote North-South/South-North TEK research training and education links. In this regard, IDRC should continue its dialogue with key Canadian First Nation groups. This can be done directly through the Assembly of First Nations, or indirectly through "plugged-in" NGO/non-profit network institutions.

- iv/ It is important that the Centre maintain a flexibility while investigating possible entry point partnerships as suggested in this report. This is partly because many TEK players have not yet performed evaluation and validation into the effectiveness of these recently initiated projects and programs (e.g., the IBPGR has recently hired a consultant to help define IK program priorities around the same time as IDRC contracted this study).
- v/ It is important for Canada to remain credible on the international TEK scene, particularly in view of recent human rights criticism of Canada's treatment of indigenous peoples (World Conference on Human Rights in Geneva - June/93). Some of these human rights criticisms are related to questionable resource development and relocation projects in the far North (or in regions where wildlife and water supplies have become contaminated with toxic pollutants), at a time when First Nation communities had little or no recourse to public consultation and decision-making authority. Much experience has been gained over the last ten years in regard to integrating TEK-based concerns and expert local knowledge into public consultation processes for land use planning, environmental impact assessment, and local tenure (resource co-management). This practical experience and established methodologies for effectively integrating TEK should be duplicated where appropriate, for indigenous communities in developing countries.

Appendix 1

Analysis of IDRC's Strategic Interests with IK-Related Research

PROGRAMS FOR SUSTAINABLE AND EQUITABLE DEVELOPMENT

Environment and Natural Resources (NRM Program) (Feb/93-CPF):

Low Input Sustainable Agriculture

Fostering the optimal environmentally sound use of locally available natural resources and use of organic/nitrogen-fixing fertilizers, natural occurring biocides, disease resistant crops and environmentally sustainable farming skills of indigenous groups and women (e.g., integrated pest management and indigenous common property management);

Green Technologies

Including the development and commercialization of "green" technologies, which are environmentally sustainable and provide income/employment (empowerment) to indigenous communities.

Information Sciences and Systems (ISSD Program) (Feb/93-CPF).

Information Policy Research

The need for participatory decision-making and intellectual property rights related to IK acquisition;

Information Capacity Building

The need for research capacity strengthening in remote sensing (i.e., GIS, and Geomatics).

(ICSN Premise)

"The important role of IK in solving problems in developing countries, is increasingly given recognition. Grassroots organizations have shown that it is possible to develop alternative, ecologically and environmentally sound, productive systems, based on self-reliance and indigenous needs".

Development Communications - (sub-program of most relevance to IK research issues).

(Objective)

"to stimulate significant, durable social transformation by improving the flow and utilization of relevant knowledge in culturally appropriate forms".

Development Communications Program Support

i/ Research

- research on information needs of communicators and grassroots organizations, and on use of national languages;
- research into the integration of indigenous and western knowledge systems and communication methods in support for social development;

ii/ Experiments and Implementation

- innovative and sustainable experiments to produce, organize, disseminate and integrate indigenous knowledge and externally-generated knowledge into participatory community information services and programs aimed at increasing skills of small artisans, traders, farmers, health workers, etc.
- experiments in the provision of information services using non-written or community media in oral societies for cultural as well as practical reasons, so that non-literates may be on equal footing with literates.

iii/ Institutional Support and Capacity Building

- collaborative South-South and North-South links and networks of government agencies, organizations, researchers and groups involved in community-level communication;
- short and medium-term training in communication skills, such as animation, participatory methods, management of community media and information services, including communication in minority languages.

ISSD/ENR COMMON IK RESEARCH INTERESTS

- i/ understanding IK systems and the relationship between people and natural resources, including patterns of IK ownership and intellectual property rights;
- ii/ documenting IK on various aspects of biodiversity and natural resource management, including research and experimentation by local people in documenting ethnobotanical and other genetic resources *in-situ*; and methodologies (from oral history to GIS technology) enabling the collection and use of traditional and scientific knowledge by communities for local management of biodiversity for sustainable use of natural resources;
- iii/ support to IK networks including its contribution to biodiversity protection and natural resource management; and specifically for Indigenous People to exchange data, and resource management techniques (NGONET model).

IDRC CORPORATE PROGRAMS OF RELEVANCE TO IK RESEARCH (Feb/93-CPF)

Evaluation

Following strategic evaluations to be built into IDRC corporate culture as contributor to policy and program decision-making:

- interdisciplinary research
- creation of networks
- Canadian partnerships
- participatory research

Canadian Partnerships

IDRC to respond to offers of partnership from Canadian NGOs and indigenous peoples (particularly where a potential North-South link may result in training and institution building)

Gender and sustainable development

Production of gender knowledge and gender-focused capacity building for Centre staff, recipients and international gender research networks.

IDRC CORE THEMES ON ENVIRONMENT AND DEVELOPMENT

Biodiversity Theme as Related to IK Research (Feb. 92 CPF)

Support for Indigenous Knowledge Networks

To help reduce erosion of indigenous/traditional knowledge through support to indigenous communities to facilitate their input into the development of national biodiversity strategies through:

- i/ strengthening and adapting social and cultural institutions; and, ii/ development of

information systems to capture and systematize IK before it becomes extinct.

Support for Common Property Management Institutions

Activities to focus on developing strategies for ensuring that local communities and marginalized ethnic minorities retain control of resources and are the primary beneficiaries of their use.

Wild Biodiversity

To support research on community participation in natural biodiversity protection by: i/ identifying and promoting sustainable viable livelihood options and alternatives for forest and coastal dwellers and people living on the periphery of protected areas; and, ii/ identifying and promoting mechanisms to extend the economic benefits of biodiversity to local people.

Domesticated Biodiversity

Research for enhancement and promotion of on-farm village-level germplasm conservation and utilization by: i/ conducting research to document and understand in-situ germplasm conservation and the relationship between the loss of cultural (IK) and biological diversity of domesticated species and enhancement methods.

Biodiversity and Biotechnology

Research into the impact of biotechnology on biodiversity including: i/ research on intellectual property rights and access to the benefits of biodiversity; and, ii/ support for international effort to get key players together to determine the impact of IPR to the implementation of the Biodiversity Convention.

Health and the Environment Core Theme

IDRC experience has shown that the success of prevention programs on environmental

impact on health is enhanced by improved community knowledge and active community participation, particularly in regard to:

- i/ impact of development and production activities (particularly agricultural environments and environmental health impact assessment);
- ii/ minimizing the health effects of environmental pollution (particularly water pollution);
and,
- iii/ environmental management of vector-borne zoonotic diseases.

UNCED AND ITS RELEVANCE TO BIODIVERSITY AND IK

The Biodiversity Convention recognizes the role that many indigenous and local communities embodying traditional lifestyles on biological resources. The convention also recognizes the desirability of equitably sharing the benefits arising from the use of IK, particularly as it relates to the conservation of key biological diversity and the sustainable use of its components. The following Articles of the convention have particular relevance to IK systems:

- **Article 8: In-situ conservation** - the need to respect, preserve and maintain knowledge, innovations and practices of individuals and local communities embodying traditional lifestyles relevant for the conservation and sustainable use of biological diversity;

- **Article 10: Sustainable use of components of biological diversity** - the need to:

- i/ to protect and encourage traditional cultural practices that are compatible with conservation or sustainable use requirements; and,
- ii/ support local populations to develop and implement remedial action in degraded areas

where biological diversity has been reduced (or regions that are environmentally vulnerable such as arid, semi-arid coastal, and mountainous ecological zones; and,

- Article 19: **Handling of biotechnology and distribution of benefits** - the need for:

- i/ effective participation in biotechnology research activities; and,
- ii/ practical measures to promote and advance priority access on an equitable basis, to the results and benefits arising from biotechnologies based on genetic resources provided by developing countries.

UNCED's AGENDA 21 AND INDIGENOUS KNOWLEDGE

"involvement of indigenous people and their communities at the national and local levels in resource management and conservation strategies and other relevant programmes established to support and review sustainable development strategies, such as those suggested in other programme areas of Agenda 21 (or those that may be developed under the Global Environmental Facility and Tropical Forestry Action Plan).

Proposed Activities of Chapter 26 - Recognizing and Strengthening the Role of Indigenous People and Their Communities:

- i/ adopt or strengthen appropriate policies and/or legal instruments that will protect indigenous intellectual and cultural property and the right to preserve customary and administrative systems and practices;
- ii/ develop a procedure within and between operational agencies for assisting Governments in ensuring the coherent and coordinated incorporation of the views

Appendix 2

Past and Current IDRC Initiatives for Empowering Indigenous Peoples in Canada and Abroad

An issue brought up by many of the IDRC staff interviewed during this study, was the need for the Centre to determine just what its comparative advantages and strengths are in its past involvement with TEK-related research activities. Any proposed TEK program for the Centre should obviously build on the in-house expertise (particularly at the Regional Office field level) and practical experience that has been gained over the years. This section provides a few representative examples of past TEK-related project activities undertaken by the Centre which relate to its strategic Divisional and Corporate TEK-related interests (Appendix 1).

IDRC's Past Experience with TEK and Sustainable Resource Management and Networking Activities

PROJECT TITLE	BRIEF PROJECT DESCRIPTION
Indigenous Participation and Resource Management in the Colombian Amazon (FY: 84/86 - \$98.7K)	To study how indigenous river communities can actively participate in the sustainable development of the region through the use of their knowledge of natural resource management, their social institutions, and culture.
Indian Agendas for Tropical Forest Protection (Colombian Huitoto local communities) (FY: 90/91 - \$63K)	To investigate the potential for applying traditional Indian models of forest protection and conservation based on community-based research.

of indigenous people in the design and implementation of policies and programmes. In addition, these policies and programmes should take fully into account strategies based on local indigenous activities;

iii/ provide technical and financial assistance for capacity-building programmes to support the sustainable self-development of indigenous people and their communities;

iv/ strengthen research and education programmes aimed at achieving a better understanding of indigenous people's knowledge and management experience related to the environment, and applying this to contemporary challenges; and, increasing the efficiency of indigenous people's resource management systems (e.g., by promoting the adaptation and dissemination of suitable technological innovations.

<p>GIS Generated Tree Planting Map Project</p>	<p>Assisted by GIS, researchers set out to develop solutions to the fodder/soil degradation crisis in Nepal by charting a "tree planting map" to indicate which of Nepal's 40 fodder species grow best in micro-climatic conditions.</p> <p>Nepalese researchers were trained over two years to use the computer software and GIS technology; as well, researchers worked closely with village councils to help introduce GIS-generated measures to protect the area's soil and to encourage the cultivation of marketable crops such as onion and garlic.</p>
<p>Environmentally Safe Piscicide</p>	<p>Taking their cue from the traditional practice of using tea seed cake for controlling predators in Thai Aquaculture, when demand out-stripped the local production, IDRC supported 7 years of research to find a safe, cheap and abundant alternative. Field tests identified a local and easily cultivated shrub (<i>Maesia ramentacea</i>) whose leaves could be dried and crushed into a safe and targeted piscicide ("swimtop") which was well received by local shrimp and fish farmers.</p>
<p>Institutionalizing the Indigenous Capacity in West Africa (FY: 91/92 - \$41.3K)</p>	<p>Support for African Resource Centre for Indigenous Knowledge (ARCIK) to identify individuals and institutions to act as a network for training in methodologies for recording of IK.</p>

IDRC's Past Experience with TEK and Health/Social Activities

PROJECT TITLE	BRIEF PROJECT DESCRIPTION
Split Lake Microbiological Water Quality Testing	<p>Three year project to train the Cree band council to carry out simple water quality testing technology (based on IDRC 10 year support for research network in developing countries and Canada's National Water Research Institute</p> <p>This fall, 3 Cree from Split Lake will travel to Chile to spend a month training Mapuche technicians on the steps to carry out their own water quality testing.</p>
Traditional Knowledge and Farm Technology (FY: 81/82 - \$4.8K)	To support a Peruvian researcher to complete the recording of communal information about traditional methods for agricultural food production in four Peruvian coastal communities.

IDRC's Past Experience with TEK Policy and Biodiversity Activities

PROJECT TITLE	BRIEF PROJECT DESCRIPTION
Ancestral Land Rights: Status and Prospects (FY: 91/92 - \$17K)	To help restore community rights to reclaim logged/mined-out lands that have been degraded due to local community alienation of traditional environmentally-sound ecological practices.
Women's Knowledge, Management and Control of Seed Genetic Resources (FY: 89/90 - \$43K)	To study the nature of Ghanian women's knowledge of important seed genetic resources and how it is sustained across generations (affiliated with WEDNET); and examine the impact of patenting new seeds from multinationals on small-scale farmers.

**Current IDRC Initiatives for
Empowering Indigenous Peoples in Canada and Abroad**

a. Assembly of First Nations: Pre-feasibility partnerships study

AFN is currently conducting an IDRC-sponsored (Canadian Partnership Program) pre-feasibility study to help the AFN to prepare a major proposal (International Cooperation Feasibility Study) to IDRC for 1993-1994 fiscal year funding. During the current pre-feasibility study (scheduled completion for August/93), the AFN will consult with First Nations both in Canada and in the South (mainly South America) to learn about their priorities and perception of international indigenous cooperation and to identify potential funding mechanisms and potential areas for cooperation.

b. Assembly of First Nations: First Nations Circle on Human Rights and Biodiversity Conference

AFN has submitted a project proposal to IDRC to undertake an international conference this summer (Aug. 24-27, 1993) in Maniwaki, Quebec. Entitled "First Nations of the Americas Circle on Human Rights and Biodiversity", selected representatives of indigenous peoples in the Americas will address the subject of biodiversity and human rights and follow-up work (outlined in a separate contract agreement).

c. Mohawk Council Of Akwesasne (MCA) and the Institute for Research on Environment and Economy (IREE - Ottawa University): First Nations - Environmental Knowledge and Approaches to Natural Resources (overview, categorization and assessment of environmental knowledge and its usefulness for native communities).

See Table 1 for summary outline of project.

TABLE 1 - MOHAWK COUNCIL OF AKWESASNE AND IREE COOPERATION PROGRAMME

Indigenous Environmental Impact Indicators **Indigenous Environmental Assessment** **Indigenous Nations-Related Socio-Economic Projects**

Project 1
Name: First Nations, Their Environmental Knowledge and Their Approach to Natural Resources
Description: analysis of indigenous environmental indicators - several community-based projects, differing in size, level of change caused by external (non-indigenous) activities; communities interact with different types of environment
Product: development of community-based environmental services, analysis of indigenous environmental impact indicators, case studies for individual communities
Status: sponsored by Department of Indian Affairs and Northern Development; the proposal to be submitted to Environmental Innovation Programme of Environment Canada; the start-up phase of the project will be financed by International Development Research Centre; possibility of cooperation with the Partnership Fund and with Ontario MOE is being investigated
Cooperating agencies: DIAND, Environment Canada, IDRC, Ontario Ministry of the Environment, Partnership Fund
Deadline: three-year project, to be started in May-June 1993

Project 1
Name: Building Respect
Description: methodological paper dealing with indigenous environmental assessment process and its comparison with "standard" environmental assessment mechanism; need for two parallel processes
Product: methodological paper
Status: approved, under way
Cooperating agencies: Ontario Ministry of the Environment
Deadline: April 30, 1993

Project 2
Name: Building Respect - Case Studies
Description: applications of the above-mentioned methodology for three different communities (Akwesasne, Manitoulin Island, Six Nations) and different types of conflicts
Product: three case study reports
Status: approved in principle
Cooperating agencies: Ontario Ministry of the Environment
Deadline: October 1993

Project 1
Name: Social and Environmental Issues Influencing Labrador Indigenous Communities
Description: analysis of alternative economic opportunities for local indigenous communities; analysis and evaluation of the existing caribou herds and their decline; analysis of background conditions - climatology, biology, etc.
Product: study
Status: Letter of Intent, preparation of proposal
Cooperating agencies: initial stages - Memorial University of Newfoundland, Newfoundland and Labrador Ministry of Environment
Deadline: unspecified

NOTE: This project is at the "idea stage"; it was not adequately discussed with MCA

d. Society for Research and Initiatives for Sustainable Technologies and Institutions and the Honeybee Network (the Indian Institute of Management)

SRISTI's recently approved proposal to IDRC entitled: "Creativity, Innovation, Entrepreneurship and Networking at the Grassroots Level", is part of an overall research action program to establish linkages between formal science with informal holistic science (TEK systems).

The key tasks of the 24 month grant include:

- i. to look into the taxonomic basis of TEK systems and derive a comparative understanding of the local and global categories of sense making;
- ii. to survey, document and disseminate local innovations throughout India and in other collaborating countries;
- iii. to provide training and technical, methodological and institutional support to Honey Bee Network members;
- iv. to put in place the software and hardware required to support access to information, data analysis and electronic communication for researchers and network members;
- v. to provide legal, technical and managerial support to local innovators in order to protect their intellectual property rights and ensure their ability to generate returns for their knowledge, inventions or value addition; and,
- vi. to produce training material supporting the incorporation of insights from IK systems into education curriculums.

Appendix 3

Recent Canadian and International TEK-Related Meetings

International Workshop on Indigenous Knowledge and Community-Based Resource Management
- Sept./91, Winnipeg, Canada;

- TEK-Related Recommendations:

i/ Ethical Guidelines; ii/ Education and Training; iii/ Research and Technology; iv/ Communications; v/ Information Management; vi/ Institutional, Legal and Economic Aspects; and, vii/ Partnerships

International Inter-disciplinary Common Property Conference Second Annual Meeting of IASCP
- Sept./91, Winnipeg, Canada

- TEK-Related Recommendations: (did not occur in this forum);

A Series of 13 IK-related papers and posters presented at the conference have been summarized in: "Traditional Ecological Knowledge: Concepts and Cases (Edited by J. Inglis).

Indigenous Network Conference: Indigenous NGO's and Practitioners Involved in International Development - Nov./91, Ottawa, Canada (sponsored by Carleton University);

- TEK-Related Recommendations: (did not occur in this forum);

Volume 1 sourcebook contains the following information on IK:

i/ Indigenous Network Profiles; ii/ Conference Papers (5);
iii/ Expanded Bibliographies & Readings; Network Names & Addresses.

IUCN World Congress on National Parks and Protected Areas in Sustaining Society - Feb./92, Caracas, Venezuela;

- TEK-Related Recommendations: (did not occur at this forum)

Of four workshop themes, IK played a large role in Workshop

Theme I: How Protected Areas Can Meet Society's Needs - i/ Community-based Management of Protected Areas; and, ii/ What Local People Can Teach Protected Area Managers.

Technical Conference on Practical Experience in the Realization of Sustainable and Environmentally-Sound Self-Development of Indigenous Peoples - May/92, Santiago, Chile (hosted by the Government of Chile);

- TEK-Related Recommendations:

A major recommendation called for UN agencies and others, with the consent and cooperation of indigenous peoples, to promote research into indigenous knowledge, and to disseminate information concerning the relationship of indigenous people to the land.

International Conference on Conservation of Biodiversity in Africa: Local Initiatives and Institutional Roles (30 Aug.- 3 Sept./92, Nairobi, Kenya;

- TEK-Related Recommendations: (not yet available);

Conference participants discussed the management and conservation of biodiversity from an African perspective: i/ establish collaborative links between local and regional institutions; ii/ standardize survey and monitoring methods; and, iii/ stimulate regional exchange of data, training and expertise; Session three on IK Systems highlighted the importance of IK in the management and conservation of biodiversity.

International Symposium on Indigenous Knowledge and Sustainable Development - Sept./92, Silang, Philippines;

- IK-Related Recommendations:

i/ Recording IK; ii/ Achieving and Sharing IK; iii/ Utilizing IK; and, iv/ Action Plan for the Global IK Network.

Seminar on Local Knowledge and Agricultural Research - 28 Sept. - 2 Oct./92, Nyanga, Zimbabwe;

- IK-Related Recommendations (Action Points):

i/ Training; ii/ Changes Required in Attitudes and Behaviour; iii/ Changes for Strengthening Local R & D Systems; iv/ Farmer - NGO Initiatives; and, v/ Intellectual Property Systems.

CTA/IBPGR/KARI Seminar on Safeguarding the Genetic Basis of Africa's Traditional Crops - 5-9 Oct./92, Nairobi, Kenya.

- Generic IK Recommendations:

i/ management of documentation and dissemination of knowledge (enhancement of local knowledge); ii/ on-farm conservation and use of traditional crops in Africa and linkage to formal institutions; iii/ policy issue (intellectual property rights and farmers rights); and, iv/ training.

Workshop on TEK and the Biodiversity Convention and Environmental Assessment - Oct./92, Peterborough, Canada.

- IK-Related Recommendations:

i/ Partnerships with indigenous people; ii/ Grassroots-driven process expressed in indigenous languages, and cultural tradition; iii/ Information exchange with indigenous NGOs; and, iv/ Funding required for indigenous biodiversity conservation.

IDRC International Workshop on Indigenous Knowledge Systems 5-7 - Oct./92, Ottawa, Canada;

- IK-Related (Brainstorming) Recommendations:

i/ IK Institution and Capacity Building; ii/ IK Networking and Data Capture Systems; and, iii/ Background Issues Related to IDRC's Role in IK Research.

ECO-ED International Workshops on Traditional Ecological Knowledge and Environmental Assessment - Oct./92, Peterborough, Canada;

- IK-Related Conclusions:

i/ Grassroots Communications DIAND Strategy; ii/ Small Community-level Committee Structures for Consultation iii/ Local-level Information Sessions; Expanded Partnership based on Consultation with Elected and Traditional First Nation Leaders

ECO-ED International Workshops on Traditional Ecological Knowledge (and Information Technologies) - October/92, Peterborough, Canada;

- Generic IK Recommendations:

i/ Improved communication for IK exchange; ii/ Indigenous control over identification, assessment of GIS use with TEK; and, iii/ Training required for indigenous GIS application and development.

**National Seminar on Indigenous Technologies for Sustainable Agriculture - 23-25 Mar./1993,
New Delhi, India.**

- Generic IK Recommendations: (Not yet available).

Appendix 4

Activities and Major Participants Involved in TEK-Related Research in Canada and Abroad

The majority of past and current research work on TEK systems has been undertaken by various multi-stakeholder interests (e.g., anthropologists, ethnologists, ethnobotanists, development and commercial planners, extension officers, land-use planners and conservationists), in order to better understand and plan for equitable sustainable resource management and protection strategies. The following institutions provide a representation of the main "players" and their current activities in TEK-related research.

Key Canadian Institutions Involved in TEK-Related Sustainable Development Research Activities

- **Assembly of First Nations - Conrad Sioui and Louise Labrie**
55 Murray St., Ottawa, Ontario (Tel. 613-2360673/Fax. 238-7230)

See Appendix 2 for description of IDRC current and planned TEK initiatives with AFN.

- **Canadian Arctic Resources Committee - Terry Fenge/Glen Okranetz**
1 Nicholas St., Ottawa, Ont. (Tel. 613-236-7379/Fax. 232-4665)

CARC has joined up with Rawson Academy of Aquatic Sciences and the Environmental Committee of Sanikiluaq, to develop, fund and implement the Hudson Bay Bioregion study. This collaborative study can be seen as the "cutting edge" of TEK research by: i/ assessing the cumulative impacts of development on a larger and complex ecosystem; ii/ utilizing TEK in the assessment of cumulative impacts; and, iii/ developing an action plan for implementing environmentally sustainable economic development in the bioregion.

- **Canadian Council on International Cooperation - Katherine Pearson/Peter Padbury**
1 Nicholas St., Ottawa, Ont. (Tel. 236-4547/Fax. 236-2188)

CCIC is maintaining liaison with the Assembly of First Nations (AFN) on some of its recent initiatives to create linkages with various indigenous groups in the South America. Both CCIC and CUSO have prepared draft policy statements on dealing with indigenous peoples and cultures both in the domestic and developing world contexts.

- Canadian International Development Agency - Pierre Richard and Norman Cook (NGO Division - Canadian Partnership Branch) 200 Prom. du Portage, Hull, P.Q. (Tel. 819-997-5456/Fax. 953-5469)

CIDA funded the April/93 research project by Ray Obomsawin and Rene Rodriguez "Culture Based Knowledge Systems in Development: Securing the Foundations for a Sustainable Future (follow-up activities to above study are not known at this time).

- Canadian Polar Commission (DIAND) - Whit Fraser/Marc Tremblay Suite 1710, 360 Albert St., Ottawa, Ont. (Tel. 613-943-8605/Fax.943-8607)

CPC is mainly interested in networking within Canada and the circumpolar countries in a manner which empowers the aboriginal peoples (e.g., Dr. Tremblay is the chairman of the Traditional Knowledge Committee with the Arctic Institute of North America (University of Calgary).

- Centre for Nutrition and the Environment of Indigenous Peoples (CINE) - Harriet Kuhnlein/Timothy Johns 21,111 Lakeshore Road, Ste. Anne de Bellvue, P.Q. (Tel. 514-398-7841/Fax. 398-7739)

An independent research and education centre established in 1992 (funding from the Arctic Environmental Strategy) to promote activities which provide indigenous peoples with useful and useable information related to nutrition and the environment. The following are CINE's three primary areas of interest and activities in research and research training:

- i/ The social sciences of what foods people select, how much, and why, in relationship to environment and culture. This is important to understand the balance of traditional to market foods, and the various social forces contributing to changing dietary patterns and nutritional health;
- ii/ The laboratory sciences of the nutrients and contaminants in foods and to understand their impact on people;
- iii/ Data management sciences provide the application of the extent of food use and the quantities of nutrients and contaminants to address questions of holistic human nutrition and health, and to explore the limits of nutrient and contaminant exposure to people in specific age and gender categories.

**- Dene Cultural Institute - Joanne Barnaby/Robert Ruttan/Martha Johnson
P.O. Box 207, Yellowknife, N.W.T. (Tel. 403-874-8480/Fax. 874-3867)**

In 1990, the DCI organized a pilot project for an international research workshop for the development of methods to document TEK for the purposes of local resource management and

education. In 1991, a final report of the Fort Good Hope TEK pilot project was prepared by the DCI "Documentation (and evaluation) of Dene TEK, this was later reflected in the IDRC publication: Lore: Capturing Traditional Ecological Knowledge.

- **Earthroots** - Sarah Winterton

401 Richmond St. West, Suite 251, Toronto, Ont. (Tel. 416-599-0152/Fax. 340-2420)

In 1992, Earthroots Fund sent a Canadian forester with experience in indigenous community forest management to Eritrea. With support from the Environment and Development Support Program (EDSP), seeds from remaining indigenous tree species were collected and stored. Eritrean elders who recall the traditional uses and habitats of indigenous trees were involved in the development of educational materials describing these trees, their traditional uses and the process to rebuild native ecosystems.

- **Environment Canada** (Green Plan - Environmental Innovation Program) - Dr. Philip Cohen
(10 Wellington St., Hull, P.Q. (Tel. 819-953-4069/Fax. 953-6897)

The above program has contributed \$100 million towards the Arctic Environmental Strategy to protect the North's fragile ecosystem and to preserve the health of northern people. Environment Canada (along with other partners such as Health and Welfare and the Canadian Polar Commission etc.) is involved in coordinating efforts and policies with aboriginal residents, the governments of the Yukon and the Northwest Territories, and with seven other nations that share the arctic region.

- **Federal Environmental Assessment Review Office** - Patrice LeBlanc and Bob Baker at
Environment Canada's Environmental Assessment Branch (Fontaine Building, Hull, P.Q. (Tel. 819-997-1000/Fax. 994-1469)

Canadian Environmental Assessment Research Council (amalgamated with FEARO) and DOE funding and support for various studies, meetings and networking activities related to TEK and environmental assessment and resource co-management planning.

Although FEARO was a major player over the last 3 years in supporting TEK-related research and meetings, their mandate has recently moved away from supporting TEK activities. Environment Canada has recently supported TEK methodology research for improving aboriginal consultation and the use of TEK in environmental assessment Review Panels in the Canadian north.

- **Inuit Circumpolar Conference** - Mary Simon/Chester Reimer/Lorraine Brooke
170 Laurier Ave. W. Suite 515, Ottawa, Ont. (Tel. 613-563- 2642)

The ICC is currently involved with eight other countries in the Arctic Environmental Protection

Strategy (agreement signed June/91) which includes a computerized multi-media display which involves the use of TEK

- **Inuit Tapirisat of Canada** - Mary Anne Demer/Mr. Les Carpenter (No response to messages)
170 Laurier Ave. West, Ottawa, Ont. (Tel. 613-238-8181)

- **Manitoba Keewatinowi Okimakanak (Natural Resources Secretariat)** - Michael Anderson
3 Station Road, Thompson, Man. (Tel. 204-778-4431/Fax. 778- 7655)

MKO has been developing its own application of GIS Terrasoft over the last few years to incorporate existing and future land use mapping data, overlay and comparison of resource inventories and economic activity. This has allowed for a more effective modelling of possible alternative patterns of development for joint environmental assessment planning.

- **North South Institute**
55 Murray St., Ottawa, Ont. (Tel. 613-236-3535)

The Institute has contracted Simon Brascoupe of Carleton University to provide an overview report on indigenous peoples and development (not yet completed).

- **O mushkegowuk Harvesters Association** - John Turner (Coordinator)
Box 370, Moose Factory, Ont. (Tel/Fax number unknown)

Involved in a northern Ontario harvest study and map biography project using adapted GIS technology in conjunction with the University of Manitoba (Dr. Fikret Berkes) to demonstrate (as part of land claims research), the value of specific ecological knowledge (i.e., elders knowledge of spawning and nesting sites) and its relation to the traditional and formal economy.

- **Partnership Africa Canada** (consortium of: USC Canada - John Martin - CEO; Inter Pares; Rural Advancement Foundation International; and Oxfam Quebec)

The Seeds of Survival Program: a unique initiative undertaken by a consortium of Canadian NGOs to respond to the genetic diversity threat posed by Ethiopia's recent droughts. Beginning in 1988, the Program has just been granted a five year extension to help indigenous farming communities and governments across Africa to: i/ collect and conserve crop genetic resources; ii/ undertake and evaluate a farmer/breeder initiative to increase landrace crop yields by a target of 5% per year; iii/ increase the potential for Africa to use and benefit from the use of its biological diversity; and, iv/ allow Canadians to see Africa's indigenous farmers as major contributors to world agriculture and as co-workers in the struggle to overcome drought and non-sustainable agricultural systems.

- **Plenty Canada** - Lawrence McDermott/Simon Brascoupe/Samuel Mercado/Jose Barreiro Tim Johnson R.R. #3, Lanark, Ont. (Tel. 613-278-2215/Fax. 278-2416)

Plenty Canada has been working with with indigenous peoples since 1976. Over past 16 years Plenty Canada has strengthened its indigenous focus which now includes native representation in its board of directors, in senior management, organizing conferences and gatherings, and the fromation of an indigenous environment and development policy group (Council on Indigenous Peoples Economies - CIPE). (See Contact, Vol 2, (4), 1992 "Indigenous Initiatives in 1993"; and Summer/1992 (quarterly) publication: "Indigenous Economics: Towards a Natural World Order").

- **UNESCO/Canada MAB and the Canadian Museum of Nature** (International Program for Traditional Ecological Knowledge) - Hon. Jim Bourque/Julian Inglis and Don Mcallister (Museum Biodiversity program); Canadian Museum of Nature, P.O. Box 3443, Stn. D., Ottawa, Ont. (Tel. 613-998-9890/Fax. 952-9693)

The objectives of the program include: i/ to foster and support research into the nature, scope, use and preservation of TEK; ii/ to promote the development and implementation of a Code of Ethics and Practice regarding the acquisition and use of TEK; iii/ to facilitate the communication, and exchange of ideas, information, experiences and practices associated with TEK; iv/ to promote the understanding and use of TEK through the formal, non-formal and informal education systems; and, v/ to ensure that both TEK and western-based science are employed in a complementary manner in planning and decision-making. Networking is also maintained through publications such as the quarterly "TEK-TALK" newsletter and the recently released publication entitled: "Traditional Ecological Knowledge: Concepts and Cases".

Key Canadian Academic Institutions Involved in TEK- Related Sustainable Development Research Activities

- **Carleton University** (Canadian Aboriginal Education and Research Centre) - Madeleine Dion Stout/Jacques Chevalier

- **McGill University** (Department of Entomology) - Dr. Stuart Hill (director of Ecological Agriculture Projects which includes participatory on-farm research programs and Farm Radio Network)

- **McMaster University** (Anthropology Department) - Dr. Harvey Feit/Dr. Richard Preston (1982 program for Technology Assessment in Subarctic Ontario - TASO)

- **University of Alberta** (Canadian Circumpolar Institute) - Drs: Milton Freeman, Rick Riewe, and Henry Lewis

- **University of Calgary** (Worldwide Indigenous Science Network - Dr. Pamela Colorado and Arctic Institute of North America - Dr. Marc Tremblay)
- **University of Regina** (Saskatchewan Indian Federated College - Centre for International Indigenous Studies and Development) - Dr. Ronald Hoenes and William Logan
- **University of Manitoba** (Institute of Natural Resources) - Dr. Fikret Berkes
- **University School of Rural Planning and Development** - Dr. Jackie Wolfe (see bibliography TEK publication)
- **York University** (Faculty of Environmental Studies - Dr. Bonnie Kettle (WEDNET Canadian Coordinator)

Key International Institutions Involved in TEK-Related Sustainable Resource Management Research Activities

- **Centre for Development Cooperation Services (CDCS); and the International Institute for Environment and Development (IIED)** - Ben Haagsma: Vrije Universiteit, De Boelelaan 1115, 1081 HV Amsterdam, Netherlands (Tel. 31-20-5485030/Fax. 31-20-6462320)

Joint research programme to explore indigenous soil and water conservation and harvesting innovative techniques in Africa. The programme aims to publish 20 case studies and produce a book and video, and to support networking among African researchers.

- **Cultural Survival Incorporated (CSI)** - Jason Clay/David Maybury-Lewis:
11 Divinity Ave., Cambridge, Massachusetts

Since 1972, CSI has supported projects designed to help vulnerable indigenous peoples to survive - both physically and culturally, the rapid changes that industrial society brings.

- **Indigenous Survival International (ISI)** - Finn Lynge/Cindy Gilday:
P.O. Box 269, 3900 Nuuk, Greenland (Tel. 299-23000/Fax. 299-25080).

Established in Yellowknife, N.W.T. in 1984, ISI's focus is primarily on defending and protecting the principle of sustainable use of nature's resources, and the right to market the products that follow from the use of those resources.

- **International Federation of Organic Agricultural Movements (IFOAM) - Oekozentrum**
Imsbach: D-6695 Tholey-Theley, Germany (Tel. 49-6853-5190/Fax. 49-6853-30110)

IFOAM aims to unite the efforts of its members to promote organic agriculture as a method of food production which is ecologically sound and sustainable .

- **International Institute for Environment and Development (IIED) - John Thompson and Charles Lane: 3 Endsleigh St., London, England (Tel. 071-388-2117/Fax. 071-388-2826)**

Involved in the use of pastoralists indigenous knowledge as key element in the Drylands and Pastoral Land Tenure Programme in East Africa.

- **International Institute of Tropical Agriculture (IITA Biological Control Programme) - Dr. Winfred Hammond/ Dr. H. Bottenberg: Kano Sub-station, Sabo Bakin Zuwo Rd., PMK 3112, Kano, Nigeria**

Involved in traditional integrated pest management research, particularly in Africa.

- **Information Centre for Low-External Input and Sustainable Agriculture (ILEIA) - Ann Waters-Bayer and Bertus Haverkort: Kastanjelaan 5, P.O. Box 64, 3830 AB Leusden, Netherlands (Tel. 033-943086/Fax. 033-940791).**

Prepared a 1992 training guide for their "Participatory Technology Development" program, in which emphasis is given to traditional farmers' knowledge and experimentation. ILEIA is also involved in TEK networking through a newsletter, an IK registry and regional workshops. Themes planned for newsletters in 1993 include: Cutting back on Chemicals; After the Harvest; and how can LEISA Alleviate Poverty. A recent ILEIA project is investigating how cosmovisions and IK systems can give new orientation for sustainable agricultural development.

- **MPCDE-Foundation Highland Research Institute - Prasert Trakarnnsuphakorn:**
29 Tanin Rd., Tambon Changpuak, Muang District Fax. -53-274947)

Dissemination of TEK research results to policy-making bodies, the media, other researchers, development agencies etc. Research aims to involve younger tribal researchers & villagers in grassroots research.

- **SOS Sahel (Nature Forest Management Project) - Nigel Cross/Gill Vogt:**
1 Tolpuddle St., London, England (Tel. 71-837-9129/Fax. 71-837- 0856)

SOS works in Africa's most vulnerable environments, helping rural poor to make the best use of their natural resources through innovative community education programmes (drama, puppetry, oral history).

- **United Nations Research Institute for Social Development (UNRISD) - Adrienne Cruz:**
Palais des Nations, 1211 Geneva 10, Switzerland (Tel. 022-798- 8400/Fax. 022-740-0791)

Conducts research on key issues of contemporary social development (e.g., ethnic conflict and development, sustainable development through peoples participation).

- **World Conservation Union (IUCN Social Policy Division - Jeremy Carew-Reid/Jeffrey McNeely):** Rue Mauverney 28, CH-1196 Gland, Switzerland (Tel. 4122- 9990001/Fax. 4122-9990002)

IUCN has developed draft guidelines entitled: "Work Programm on the Integration of Indigenous Peoples in Strategies for Sustainability" (31 March 1993). This Agenda 21 follow-up activity which is currently being reviewed by various indigenous people and organizations in Canada and abroad, will culminate in a 3 day symposium (held jointly by IUCN and ISI in Hawaii in the late summer, 1993) and later, a Workshop to be convened in Buenos Aires in January, 1994. Two of the major activities of these upcoming events will be to consolidate and strengthen IUCN's indigenous peoples network and to raise the awareness of the importance of indigenous communities in the sustainable management of natural resources.

- **World Resources Institute (Jonathan Lash/Walter Reid/Kirk Talbott):**
1709 New York Ave., N.W., Wash. D.C. (Tel. 202-662-2533/Fax. 202-638-0036)

While specific information on current TEK-related research activities was not accessible, an impressive paper was delivered to the Sept./91 Common Property Conference in Winnipeg entitled: "Nation States and Forest Peoples: Tenurial Control and the Squandering of the Central African Rainforest".

Key International Institutions Involved in TEK-Related Biodiversity Conservation and Networking\Database Activities

As recent descriptions of existing IK networks and resource centres have been adequately covered (Appendix 5) in the IK & D Monitor, the Philippines Symposium on IK, and recently by Ray Obomsowin's report to CIDA's NGO Division , the following presents a some other global institutions which are active in IK networking activities:

- **Advisory Committee for Coordination of Information Systems (ACCIS):**

Helps users gain access to UN databases and information resources.

- **Association for Farming Systems Research and Extension (AFSRE)**
 - Dr. Clive Lightfoot: MC P.O. Box 1501, Makati, Manila 1299, Philippines

A global association whose membership is comprised of individuals and regional associations and networks that are involved in research activities related to farming systems. Currently compiling a computerized database of networks interested in exchanging information relevant to farming systems research and extension.

- **Association for Progressive Communications (APC), GEONET, and the Telecommunications Cooperative Network (TCN):**

Advocacy networks for environment and development.

- **Centre for Indigenous Environment and Development (CIED), and Darien Information Systems (DIS) - Grant Thomas/Ernest Chang: 4224 University Way, Suite B, Seattle, Wash. (Tel. 206-547-2361/Fax. 206-547-1666)**

The International Conservation Software (ICONS) proposal to Canada Man and the Biosphere Program provides a simple, powerful and low-cost data management system which allows individuals and communities to better organize and express their local traditional knowledge and views about biodiversity and its equitable management.

- **Centre for International Research and Advisory Networks (CIRAN) - Dr. Guus von Liebenstein: P.O. Box 29777, 250s LT The Hague, Netherlands (Tel. 31-70-4260321/Fax. 31-70-4260329)**

In the coming months, CIRAN will begin the first steps in electronic networking along the lines of a pilot project based on two tracks: i/ - E-mail, electronic publication of the IK & D Monitor and electronic conferencing; and, ii/ activities for a relatively small group of persons and institutions, especially in the South (e.g., the established Regional and National IK Resource Centres), to experiment with electronic networking and with all the technical, financial, organizational, training and supporting aspects.

At a later stage, CIRAN will incorporate in the electronic networking pilot project, the possibilities of making existing databases available to users on-line.

- **Centre for Plant Breeding and Reproduction Research (CPRO-DLO) - Walter de Boef: Droevendaalsesteeg 1, P.O. Box 16, NL-6700 AA Wageningen, Netherlands (Tel. 31-8370-77000/Fax. 31-8370-18094)**

Currently in contact with IDRC (Ronnie Vernooy - Domesticated Biodiversity) for research multi-partner proposal funding for "Community Biodiversity Development and Conservation

Programme" (planned individual projects for Latin America, Africa and Asia/Oceania). Also intend to organize a specialized network of organizations active in community development and conservation of biodiversity and plant genetic resources.

- European Centre for Research, Experimentation and Learning for the Knowledge Age (Inter-cultural Knowledge Sharing - NEUROPE LAB - Dr. Andre Boder: 74166 Archamps - France (Tel. 33-5031-5620/Fax. 33-5031-5630)

Just in Time Open Learning (JITOL) is an educational project for communities in Botswana, the objectives addressed by JITOL are: i/ to make the core of knowledge available for the particular community; and, ii/ to allow members of the community to share their know-how (TEK), in order to make it more adequate for their purposes in their particular culture and professional community. JITOL provides the method and tools to allow people to access their know-how at a distance and to exchange their know-how in debates through telematic computer networks and faxes.

- Honey Bee Centre for Management in Agriculture (Indian Institute of Management) - Dr. Anil Gupta: Vastrapur, Ahmedabad - 380 015, India (Tel. 407241/Fax. 91-272-467396)

A global network for documenting, testing and exchanging information about indigenous ecological and technological innovations. The Honey Bee network aims not only to document innovations generated by indigenous and local people in different bioregions, but also to lobby for the protection of their intellectual property rights (see comments on SRISTI - Honeybee draft proposal in section 3.3: "Conserving Biodiversity through Documentation, Experimentation and Value Addition in Local Innovations for Development and Diffusion of Sustainable Technologies and Institutions").

- Indigenous Preservation Networking Center (Cornell American Indian Agriculture Program) - Jose Barreiro: 300 Caldwell Hall, Cornell University, Ithaca New York (Tel. 607- 255-1923/Fax. 607-255-0788)

Promotes indigenous community networking and development projects in American Indian traditional agriculture, herbal medicine and sustainable forestry.

- International Board for Plant Genetic Resources (IBPGR) - Luigi Guarino/Geoff Hawlin: P.O. Box 30709, Nairobi, Kenya (Tel. 254-2-632054/Fax. 254-2-631499)

IBPGR recently hired a ethnobotanist consultant to advise them on program priorities in IK (final report pending).

- Network for Information on Indigenous Peoples - Jose Zarate, 54 Lochearne St., Hamilton, Ont. (306-523-7356/Fax. 306-523-7356 -correspondance returned - address unknown):

Seeks to promote discussion and exchange of TEK-related information through a directory, resource materials, a resource center, and publication of a bi-monthly newsletter.

- NGONET/ECONET:

An initiative of various NGOs to help share information on environment, economy and the human dimensions of development (e.g., Third World Network, Instituto del Tercer Mundo, Climate Network Africa, etc.)

- Northern Science Network - Dr. Fred Roots:

Network of Northern Circumpolar Co-operation was initiated by MAB in 1981. It emphasizes co-operative research and the sharing of information in regard to natural renewable resources, and the problems caused by industrialization or economic development imposed upon indigenous, traditional, and often declining economies of different cultures and value systems. At least 10 countries involved in the network, and a Northern Science Network Newsletter has been distributed internationally.

**- South-North Network Cultures and Development - Thierry Verhelst/Edith Sizoo:
174 rue Joseph II, B-1040 Brussels, Belgium (Tel. 4637/Fax. 32/2-231-1413)**

Network focus is on peoples' cultures and knowledge systems in development approaches (head office in Brussels with regional offices in Africa, Latin America and Asia).

- United Nations Centre for Human Rights - Erica-Irene A. Daea (Rapporteur of the Working Group on Indigenous Populations): United Nations, 1211 Geneva 10, Switzerland

Main coordinating body to undertake activities associated with the 1993 International Year for the World's Indigenous Peoples. The Year's theme - "Indigenous people: a new partnership", is designed to encourage the development of new North-South/South-North relationships which are designed to foster: i/ the funding of concrete projects for and carried out by indigenous communities; ii/ the establishment of networks on indigenous organizations and communities for the sharing of information experience in fields such as health care, education and resource and environmental management; and, iii/ an increased cooperation, coordination and technical assistance for the solution of problems faced by indigenous communities in areas such as human rights, the environmental protection, development, education and health.

- **UNDP Sustainable Development Network** - Chuck Lankester: Room FF-12108, One United Nations Plaza, New York, NY (Tel. 212- 906-5862/Fax. 212-906-6952)

Progress is reported in the UNCED-related follow-up creation of the Sustainable Development Network. The SDN encourages the use of main instruments that are user-friendly, low-cost, demand-driven databases which are accessible to both users and suppliers of information related to sustainable development (e.g., E-mail, electronic conferencing systems, and research networks such as InterNet). Special attention will be given to local indigenous knowledge and to the transfer and sharing of appropriate technology such as FIDONET bulletin board systems (BBS), and pocket radio/satellite transmissions.

- **Winrock International Institute for Agricultural Development** - B. Havener, and David Mattocks: Petit Jean Mountain, Morrilton, Arkansas (Tel. 501-727-5435/Fax. 501-727-5242)

Winrock's On-Farm Seeds Project in Africa uses TEK in conjunction with regional and international expertise.

- **Women, Environment and Development Network (WEDNET)** - Dr. Bonnie Kettel (York Univ. Cdn. Coordinator) and Rosemary Jommo ELCI Coordinator): Faculty of Environmental Studies, York University, North York, Ont.

Launched in 1989 to document and gain recognition for women's IK, as part of the search for strategies to halt Africa's environmental degradation and bring about sustainable development.

- **World Wide Fund for Nature (WWF - Biodiversity Unit); UNESCO (Division of Ecological Sciences - MAB); and Royal Botanic Gardens (KEW) - (People and Plants Programme: Ethnobotany and the Sustainable Use of Plant Resources):** 7 Place de Fontenoy, 75352 Paris, CEDEX 07 SP France (Tel. 33-1-45960412/Fax. 33-1-44919882)

Four year programme initiated in 1992 to contribute to the sustainable and equitable use of plant resources by supporting ethnobotanists from developing countries to work with local communities to: i/ study and record the use of plant resources; ii/ to reduce the conservation and over-exploitation of plant resources; iii/ promote sustainable methods of harvesting non-cultivated plants; and, iv/ ensure that local communities benefit from the conservation and use of plant resources.

Ethnobotanical Information Databases

Much of the information being generated on biodiversity as related to traditional medicinal plants (environmental health) is on a taxonomic and traditional use level which is best captured by various database networks as represented by the following examples:

The WHO-funded Natural Products Information System database (NAPRALERT) which has bibliographic references, numerical data and textual information on biochemistry, pharmacology and traditional uses (Loub et al., 1985).

The regional bibliographic database and referral database of information sources, research institutions and experts of the UNESCO-supported Asian Pacific Information Network on Medicinal and Aromatic Plants (APINMAP) which brings together information from eleven national nodes.

The database of the Instituto Mexicano para el Estudio de las Plantas Medicinales (IMEPLAM) which has data on the utilization of Mexican plants in traditional medicine as extracted from the literature (Loub and Farnsworth, 1984).

The database of the Chinese University of Hong Kong which contains information on traditional Chinese medicine (Loub and Farnsworth, 1984).

PHARMEL is a database of information on medicinal plants collected on ethnobotanical expeditions organized by France's Agence de Cooperation Culturelle et Technique (ACCT) in eleven countries (mostly West Africa); a standard methodology for data gathering has been developed (Waechter and Lejoly, 1990).

NEMOBASE holds fieldwork and literature data on traditional uses of plants in France (Dos Santos, 1990).

The AYURBASE project aims to compile data from the Ayurveda system of Indian medicine (Mazars, 1990).

To help supplement the above database examples, Jain et al. (1986) have produced A World Directory of Ethnobotanists that can be used to identify expert knowledge in a particular area.

Appendix 5

Current Bibliography of Applied TEK in Biodiversity Conservation and Traditional Resource Management Practices

Traditional Sustainable Resource Management

- Paul Alan Cox 1991. **Indigenous Control of Tropical Rain-forest Reserves: An Alternative Strategy for Conservation.**

In areas occupied by indigenous populations who have a strong conservation ethic, the creation of reserves under partial or complete aboriginal control, have been shown to present a viable alternative to the more traditional forms of land acquisition.

- Luigi Guarino 1992. **Collecting landraces: documenting indigenous knowledge in the field; and Indigenous Knowledge and the plant germplasm collector.**

These two papers outline the specialized ethnographic methodology that is required for plant germplasm collectors to document IK of landraces, crops, wild plants and the environment.

- Elizabeth Hoddy 1991. **Nature's Bitter Boon: The Neem Tree - a Substitute for Pesticides.**

Pesticides account for about 3 million poisonings each year and are one of the most dangerous and persistent environmental pollutants. A harmless but effective alternative to chemical pesticides are extracts of the neem tree whose beneficial effects have been known to traditional farmers in India for thousands of years.

- International Fund for Agricultural Development 1992. **Soil and Water Conservation in Sub-Saharan Africa: towards sustainable production by the rural poor.**

The process of land degradation is described, together with techniques used by the local population to conserve land and water. The various aspects (technical, socio-economic, institutional) of designing programmes are considered, and recommendations are made for national strategies.

- Peter Knudtson and David Suzuki 1992. **Wisdom of the Elders.**

The authors have collected and preserved native peoples' profound ecological wisdom of the workings of nature and spiritual beliefs from regions around the world including Canada. The authors have also juxtaposed with the brief case-studies, the knowledge of some of the most respected elder scientists to make the point that traditional wisdom and science have many features in common.

- Charles Lane 1990. **Barabaig Natural Resource Management: Sustainable Land Use Under Threat of Destruction.**

This UNRISD Discussion Paper reports on the traditional land management practices of the Barabaig (semi-nomadic pastoralist group in Tanzania), and on the impact that a large-scale CIDA wheat project has had on their sustainable common property management system and to the environment.

- Evelyn Mathias-Mundy, Olivia Muchena, Gerard McKiernan, and Paul Mundy 1992. **Indigenous Technical Knowledge of Private Tree Management: A Bibliographic Report.**

The report gives an overview of indigenous technical knowledge on private tree management and discusses how it might be applied in development programmes in developing countries.

- Michael Pickstock 1992. **Smallfarmer knowledge and pest control.**

Report of a recent seminar by Britain's Natural Resources Institute on the traditional practices for crop protection for resource-poor farmers using integrated pest management.

- Chris Reij 1991. **Indigenous Soil and Water Conservation in Africa.** IIED,

Indigenous engineering practices for soil and water conservation are analyzed, using case-studies from several countries.

- Coen Reijntjes, Bertus Haverkort and Ann Waters-Bayer 1992. **Farming for the future: an introduction to low-external-input and sustainable agriculture.**

Drawing from the experience of members of an extensive network of innovative farmers, fieldworkers and scientists, this handbook offers methods and principles for helping small farmers to increase production in a sustainable way, making use of low-cost local resources.

- H. David Thurston 1991. **Sustainable Practices for Plant Disease Management in Traditional Farming Systems.**

This work discusses natural pesticides, biological control methods, host-plant resistance, post-harvest storage, and cropping practices. The author evaluates the sustainability of the various systems, and the labour and external inputs needed for their management.

- UNESCO 1990. **The Wisdom of the ages: Recording and diffusing traditional ecological knowledge: Preliminary Survey of Traditional Phytopractices in Tropical Regions.**

- D. Michael Warren, L. Jan Slikkerveer and David Brokensha (eds) 1993. **Indigenous Knowledge Systems: the Cultural Dimension of Development.**

This comprehensive work (33 chapters) is the first volume in a series (The International Library of Development and Indigenous Knowledge), which will present studies that examine the relationship between indigenous knowledge and development policies and practice (e.g. section entitled "International Institutions and Indigenous Knowledge").

(Biodiversity Conservation and Traditional Medicine)

- Brent Berlin 1992. **Ethnobiological Classification. Principles of categorization of plants and animals in traditional societies.**

The author explains the regularities in classification that persist across local environments, cultures, societies, and languages.

- Elaine Elisabetsky 1991. **Folklore, Tradition, or Know-How? The ethnopharmacological approach to drug discovery depends on our ability to value non-Western knowledge of medicinal plants".**

This paper calls attention to the importance of natural products in the development of new drugs. It stresses the adequacy of the ethnopharmacological approach as a research strategy for underdeveloped countries, as well as presenting research results that may have significant impacts on the health-care systems of these countries.



- Dr. Jack Githae 1992. The Role of Alternative Medicine in a Sustainable Environment and Development.

This paper reviews the role that alternative medicine can play in Africa in raising the standard of health while conserving the environment at the same time. The author feels that mass action by Africa's youth in particular, is required to campaign for the conservation of these medicinal resources (herbs and alternative medicinal practices such as psychic, acupuncture/acupressure etc.).

- Mark Plotkin 1990. The Healing Forest: The Search for New Jungle Medicines.

- Darrell Posey 1991. Effecting International Change: Many international organizations are exploring intellectual property rights for indigenous peoples. (Here's a rundown of the current players: who's involved, who isn't and who should be).

- U.S. National Research Council 1992. Conserving biodiversity: a research agenda for development agencies.

This report presents an agenda for research in areas critical to the conservation of biodiversity in the world developing countries. It argues that research should promote the application of local knowledge to modern resource management.

- Kirsi Viisainen 1992. Nicaraguan midwives: the integration of indigenous practitioners into official health care.

The process of integration is described both at the level of government policy and at the level of training. The author stresses the importance of a critical medical anthropological approach for overcoming perceived conflict between traditions.