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**Sharing of**

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**Traditional Technology**

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**Project Meeting Report**

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**Tokyo, Japan, September 1977**

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**THE UNITED NATIONS UNIVERSITY**

## **From the CHARTER OF THE UNITED NATIONS UNIVERSITY**

### **ARTICLE I**

#### **Purposes and structure**

1. The United Nations University shall be an international community of scholars, engaged in research, post-graduate training and dissemination of knowledge in furtherance of the purposes and principles of the Charter of the United Nations. In achieving its stated objectives, it shall function under the joint sponsorship of the United Nations and the United Nations Educational, Scientific and Cultural Organization (hereinafter referred to as UNESCO), through a central programming and co-ordinating body and a network of research and post-graduate training centres and programmes located in the developed and developing countries.

2. The University shall devote its work to research into the pressing global problems of human survival, development and welfare that are the concern of the United Nations and its agencies, with due attention to the social sciences and the humanities as well as natural sciences, pure and applied.

3. The research programmes of the institutions of the University shall include, among other subjects, coexistence between peoples having different cultures, languages and social systems; peaceful relations between States and the maintenance of peace and security; human rights; economic and social change and development; the environment and the proper use of resources; basic scientific research and the application of the results of science and technology in the interests of development; and universal human value related to the improvement of the quality of life.

4. The University shall disseminate the knowledge gained in its activities to the United Nations and its agencies, to scholars and to the public, in order to increase dynamic interaction in the world-wide community of learning and research.

5. The University and all those who work in it shall

act in accordance with the spirit of the provisions of the Charter of the United Nations and the Constitution of UNESCO and with the fundamental principles of contemporary international law.

6. The University shall have as a central objective of its research and training centres and programmes the continuing growth of vigorous academic and scientific communities everywhere and particularly in the developing countries, devoted to their vital needs in the fields of learning and research within the framework of the aims assigned to those centres and programmes in the present Charter. It shall endeavour to alleviate the intellectual isolation of persons in such communities in the developing countries which might otherwise become a reason for their moving to developed countries.

7. In its post-graduate training the University shall assist scholars, especially young scholars, to participate in research in order to increase their capability to contribute to the extension, application and diffusion of knowledge. The University may also undertake the training of persons who will serve in international or national technical assistance programmes, particularly in regard to an interdisciplinary approach to the problems with which they will be called upon to deal.

### **ARTICLE II**

#### **Academic freedom and autonomy**

1. The University shall enjoy autonomy within the framework of the United Nations. It shall also enjoy the academic freedom required for the achievement of its objectives, with particular reference to the choice of subjects and methods of research and training, the selection of persons and institutions to share in its tasks, and freedom of expression. The University shall decide freely on the use of the financial resources allocated for the execution of its functions. . . .

**SHARING OF TRADITIONAL TECHNOLOGY**

**PROJECT MEETING REPORT**

**TOKYO, JAPAN, SEPTEMBER 1977**

**THE UNITED NATIONS UNIVERSITY**

This document was prepared within the framework and as part of a research project of the United Nations University's Human and Social Development Programme.

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## I. ORGANIZATION OF THE MEETING

1. The Task Force Meeting on the Sharing of Traditional Technology (STT) was held in Tokyo at the United Nations University Headquarters from 26 to 30 September 1977.
2. The objective of the meeting was to formulate recommendations concerning the preparation and implementation of the Project on the Sharing of Traditional Technology.
3. The meeting was attended by 11 participants from eight countries. Invited participants from India and Pakistan were unable to attend. The participants attended the meeting in their individual capacities. In addition, the following members of the United Nations University participated in the meeting: Dr. James M. Hester, Rector; Dr. Kinhide Mushakoji, Programme Vice-Rector for Human and Social Development; and Dr. Pedro Henriquez, Programme Officer. The list of participants is given in Appendix II.
4. The meeting elected Dr. Mushakoji as the Chairman, Mr. Khor Kok Peng as General Rapporteur, and Dr. Henriquez as Secretary.
5. The Rector of the United Nations University, Dr. James M. Hester, gave the opening address, introducing the objectives, structures and programmes of the University. He stressed the University's philosophy of organizing research for the purpose of seeking ways to alleviate the urgent problems of human survival, particularly in developing countries. For this purpose, the University's research projects were organized under the three programmes of World Hunger, the Use and Management of Natural Resources, and Human and Social Development. The University's aim is to establish a network of institutions—universities, research institutes, as well as other relevant groups and individuals—which are able to actively participate in the programmes.

6. Dr. Mushakoji presented a brief explanation of the Human and Social Development Programme, of which the STT project is an integral component. He emphasized the interrelatedness of the various projects under the Human and Social Development Programme, which is oriented towards self-reliant, need-oriented development. The STT project has an important contribution to make in the fostering of this type of development, as it is oriented towards the practical solution of pressing problems through the use of an interdisciplinary approach. The STT project has obvious important linkages with other projects of the Human and Social Development Programme, i.e., Research and Development Systems in Rural Settings, and Goals, Processes and Indicators of Development, and also the other programmes of the United Nations University.

7. The meeting was conducted on the basis of the "Project Proposal on the Sharing of Traditional Technology" prepared by Mr. Chandra Soysa, Consultant to the United Nations University, which provides the background and purpose of the project. This paper is Appendix III of this report.

## II. THE CONCEPT OF TRADITIONAL TECHNOLOGY

8. During the course of the meeting, it was agreed that it is difficult to conceptualize traditional technology. However, the following concept was developed. By traditional technology was meant basically non-industrial technologies which have evolved out of generations of experience of village communities and which form an integral component of the entire socio-economic, cultural and ecological complex of these communities. They thus form a collection of endogenous solutions to local problems and an in-depth understanding of traditional technology, and the realization that its eventual successful sharing could be achieved only if its social and ecological context is taken into consideration.

9. Some of the important positive characteristics of traditional technology are that:

- (a) its scale of production is usually small, requiring the labour of individuals or small groups (usually the family unit), with the exception of cases such as irrigation systems, which usually require co-operative village labour;
- (b) it uses little capital (in terms of savings or modern machinery) and is labour-intensive; and
- (c) it is easily accessible to small farmers in terms of obtaining materials (often from the natural environment) to set it up and to obtain the skills needed for its use.

10. The usefulness and scope of traditional technology in the developmental process are as follows. The small scale of production of most traditional technology implies capacity for its control and use by small farmers; in the case of large-scale traditional technology, it is usually established through co-operative labour, thus implying common access. The low level of capital, with the technology often based on natural elements in the environment, implies accessibility and control by the small farmer; the high labour-intensity enables the productive absorption of otherwise surplus and untapped labour. It is the purpose of this project to determine to what extent and how easy accessibility to



traditional technology enables the peasant family to participate in, control and enjoy the fruits of production; allows the village to develop in a self-reliant way; is compatible with the ecology; and, by its nature, may reduce the problems of poverty, inequities and unemployment and underemployment.

11. The development of traditional technology does not preclude the use of modern technology; rather, appropriate elements of modern industrial technology could be adapted to help improve traditional technology. It is, however, realized that modern technology is for the most part beyond the reach of poor villagers, who live under preindustrial conditions in the sense that they do not have access to the full benefits of modern technology. While the ideal long-run situation is presumably a successful and harmonious integration of the two types of technology, the purpose of the project is to determine to what extent in the present period the development of traditional technology can play an important contributory role in improving the living standards and quality of life of the rural poor.

### III. OBJECTIVES OF THE PROJECT ON THE SHARING OF TRADITIONAL TECHNOLOGY

12. For the purposes of the STT project, the target group was defined as the rural poor, i.e., those living in the rural sector, including the agricultural and non-agricultural labour force. It is envisaged that the project would contribute towards self-reliant development by creating an awareness of the usefulness of, and wisdom represented by, traditional technologies; and by the actual process of transferring and spreading of useful traditional technologies among villages at the national, regional and international levels.

13. The main objectives of the STT project are to:

- (a) assess the potential for increasing the resources of the rural poor;
- (b) contribute to an understanding of the answers to local problems, given the nature of societal and structural changes which generate, within poor communities, the capacity and ability to effect innovative technological change; and
- (c) investigate the possible linkages between traditional technology and modern technology and examine how they can be harmonized to effect the positive process of rural transformation.

#### IV. IMPLEMENTATION OF THE PROJECT

14. It was generally agreed that since traditional technologies arose out of particular social and ecological settings, the implementation of the STT project should include research into the socio-economic, cultural and ecological systems of the communities in which they are found, as well as the research into and eventual sharing of traditional technologies.

15. *Social and Ecological Background:* In the research in the socio-economic and cultural systems, the linkages between traditional technology and factors such as the patterns of ownership, production, distribution and consumption, of leadership, authority and participation, and of kinship and religion would be examined. In the research into the ecological background, factors such as the availability and nature of natural elements (land, water, soil, climate, etc.) would be studied. Through research into these social and ecological factors, it was hoped that the processes through which traditional technologies have evolved, and as the conditions necessary for their existence and development, as well as the impact of modernization on these technologies, would become clarified. Only then can the groundwork be prepared for the eventual transfer of traditional technology.

16. *Research into, and Transfer of, Technology:* It was envisaged that there would be four stages of research leading to the transfer of traditional technology. These were: identification; inventory-taking; screening, pretesting and evaluation; communication and transfer. The forms these stages would take would be the following.

- (a) Identification: Traditional technologies would be identified (using the criteria of usefulness as perceived by local communities, and transferability) through two types of studies, i.e., longitudinal village studies and desk studies (on ongoing programmes, research, publications and films relevant to the subject; on non-settled communities; and on past civilizations whenever they throw light on traditional responses).
- (b) Inventory-taking and contextual analysis of each traditional technology:

An inventory of traditional technologies would be taken, according to a format with the following items as guidelines: components and sizes of materials used, operational technique and function, geographical and ecological conditions, socio-economic and cultural contexts.

- (c) Screening, pretesting and evaluation: The traditional technologies chosen would be subject to a process of screening, pretesting and evaluation for acceptability and utility within the community, for suitability and safety outside the community by a technical panel using modern scientific methods, and for transferability (capacity to be transferred to other villages) by a panel of individuals both within and without the community.
- (d) Communication and transfer: The selected villages will be the venue for workshops and seminars in which controlled experiments of transfer and diffusion will be carried out, and in which centres will eventually be set up containing a communication training unit, documentation unit and research and development group, in a manner which will result in an effective transfer as a resource augmentation to the rural poor.

17. *Area of Focus on Traditional Technologies:* It was felt that the technological responses which need to be identified, documented, analysed and disseminated should be of manageable proportions. At the same time, these should be of a sufficient range to demonstrate the interrelatedness of the various kinds of relevant technology. The following six specific systems of technology were presented for the consideration of the meeting as examples for study and transfer: the infant-mother relationship, care of the adult body, human shelter, and management of water, land, and the climate. These six systems could be further divided into 12 sub-systems (see Chart in Appendix IV).

18. It was agreed that each participating institution could choose a focal point for its research and that it should investigate and identify other possible areas or categories of technology which may have been omitted but may emerge in the course of the village studies. The sub-systems were not to be seen as isolated from each other but merely facets of a total complex system, reflecting some of the key developmental areas at the village level.

## V. THE PILOT STUDY PHASE OF THE PROJECT

### Scope of work

19. The Task Force Meeting agreed that the project should start with a one-year pilot study phase which would be based on research carried out in rural villages according to a commonly agreed set of guidelines and to the resources and expertise available to each participating research unit and its network, which operates taking into account existing national development plans. In this pilot study phase it was envisaged that the following areas of research and activities be implemented:

- (a) the identification and establishment at the country level of a network of relevant institutions, groups and individuals already researching and working in areas relevant to the project;
- (b) research into the socio-economic, cultural, and ecological contexts of the communities chosen for field research and activity;
- (c) identifying, inventory-taking and evaluating traditional technologies according to the format in paragraph 16 (a), (b) and (c); and
- (d) examining the feasibility of communicating and transferring traditional technologies.

20. The meeting was of the opinion that the one-year pilot study phase was important for the participating institutions to establish a network of local institutions, groups and individuals to participate in various ways in the project; to select, make an entry point and be familiarized with the villages under study; to gain an understanding of the social and ecological systems in the communities and their linkages to the systems of traditional technologies; and to identify, take an inventory of, and evaluate chosen traditional technologies. This was seen to be an already ambitious undertaking, given the constraint of time and resources. It was envisaged that, at the end of the pilot study phase the participating institutions would be able to refine the concept and the role of the traditional technology, to comprehend more fully the conditions of their existence and the processes of

their development within the social and ecological contexts of the communities, and to prepare a feasibility report on the conditions necessary and the steps to be taken for the implementation of the communication and transfer phase of the project.

21. In carrying out the phases of identification, inventory-taking and evaluation of traditional technologies, it was agreed that each participant's institution would choose one or two sub-systems as the focus of its intensive study, while also looking into how technologies in other sub-systems interrelate to them. The areas of focus chosen by the various participating institutions are at the end of this report.

### **Methodology of the pilot study phase**

22. The methodology to be employed during the pilot study phase was extensively discussed by the meeting. The various aspects of the methodology decided on are described in the following paragraphs.

23. *Selection of villages:* The meeting agreed that in the pilot study phase each institution would select about three villages for the longitudinal village studies. For the selection of villages, the following criteria were adopted by the meeting: degree of exposure to modernization; degree of market orientation; occupational patterns; settled or non-settled community; ethnicity of the community; and type of land tenure system. These criteria were to be used as guidelines for participating institutions in the process of choosing the villages; the choice of criteria would obviously vary according to the different ecological and social conditions of different countries.

24. *Method of field research:* The meeting agreed that the method employed in the field research would be crucial to the successful implementation of the pilot study phase. As the key objectives were to understand the social and ecological conditions of the village and to draw out response from villagers, it was agreed that a dialogical approach would be adopted in which the field researcher and the villagers would engage in a genuine exchange of knowledge and information. For this to materialize, it was accepted that field researchers should, as far as possible, be domiciled in the selected villages for sustained periods. Wherever necessary, especially for the collection of socio-economic data, the questionnaire method would also be used.

25. *Training of field researchers:* It was agreed that the researchers who were to implement the field studies would have to undergo a training programme aimed at providing them with the concepts, objectives and methodology of the research and activities required at field level.

26. *Establishing village response:* The meeting agreed that, for the eventual transfer of traditional technology to take place, the village communities involved could not play a passive role. It was thus necessary for the villagers to establish responsiveness to appropriate development strategies, and the capacity for self-reliance in both decision-making and resources. The meeting recognized that this crucial aspect was a lengthy process. For the pilot study phase it was envisaged that this process would be started by the dialogue between researchers and villagers as well as among villagers, by holding village seminars, and by the distribution of newsletters or booklets on aspects of traditional technology.

27. *International exchange of information:* The meeting agreed that the results of the research and activities conducted (e.g., publications or results of village seminars) be exchanged among the participating institutions through the co-ordinating unit (Marga Institute, Sri Lanka) and the United Nations University Headquarters.

28. The meeting envisaged that, with the above methodology employed, it would be possible at the end of the one-year phase for the institutions to grasp the conditions necessary and processes involved for a study on the successful transfer of traditional technology. It was thus envisaged that at the end of the phase each participating institution would be able to report on the interrelation between traditional technology and the socio-economic, cultural and ecological systems in the communities; the progress of the phases of identifying, inventory-taking and evaluation of traditional technologies; and the feasibility of implementing the transfer of traditional technology in the later phases of the STT project.

#### **Timetable for and evaluation of the pilot studies**

29. The meeting agreed on the timetable set out in Table I. The pilot studies will start on 25 October 1977 for one year. At the end of one year, the United Nations University will evaluate the result of the studies and will decide whether to continue the project as it was designed and discussed in the Planning Meeting in January 1977, or to modify the research framework or the network composition on the basis of the above evaluation.

#### **Pilot studies**

30. The meeting discussed the focuses of the eight pilot studies listed below.
- Pilot Study 1: Indonesia
  - Pilot Study 2: Iran
  - Pilot Study 3: Japan

# TIMETABLE FOR PILOT STUDIES IMPLEMENTATION

October 1977 to October 1978 Table I

	UN University	Marga Institute	First generation of research units (Indonesia, Iran, Japan, the Philippines, Sri Lanka)	Second generation of research units (Malaysia, Nepal, Thailand)
1977 October	Conceptualization	Start preparation of guidelines in handbook form	Prepare sub-project proposals and start preparatory activities	
November			Budget making	Prepare sub-project proposals and start preparatory activities
December				Budget making
1978 January				
February		Handbook		
March			Progress report 1	Progress report 1
April			Project meeting (Bangkok)	Project meeting (Bangkok)
May				
June				
July				
August				
September			progress report 2	Progress report 2
October	Evaluation of the pilot studies		Project meeting	Project meeting



Pilot Study 4: The Philippines  
Pilot Study 5: Sri Lanka  
Pilot Study 6: Malaysia  
Pilot Study 7: Nepal  
Pilot Study 8: Thailand

31. On the basis of the papers on these pilot studies, each research unit will prepare a proposal following the outline suggested by the Chairman and approved at the meeting. The pilot study papers and the outline for presentation are shown in Appendix I.

32. These research proposals will be sent to the United Nations University and Marga Institute before 21 October 1977.

#### **Adoption of the report**

33. The report of the Task Force Meeting was adopted at the plenary session on 30 September 1977. The participants charged the Secretary to edit and finalize it.

## APPENDIX I: THE PILOT STUDIES

### Pilot Study 1: Indonesia

Dian Desa

(Duration: one year)

#### 1. Objectives of the Pilot Study

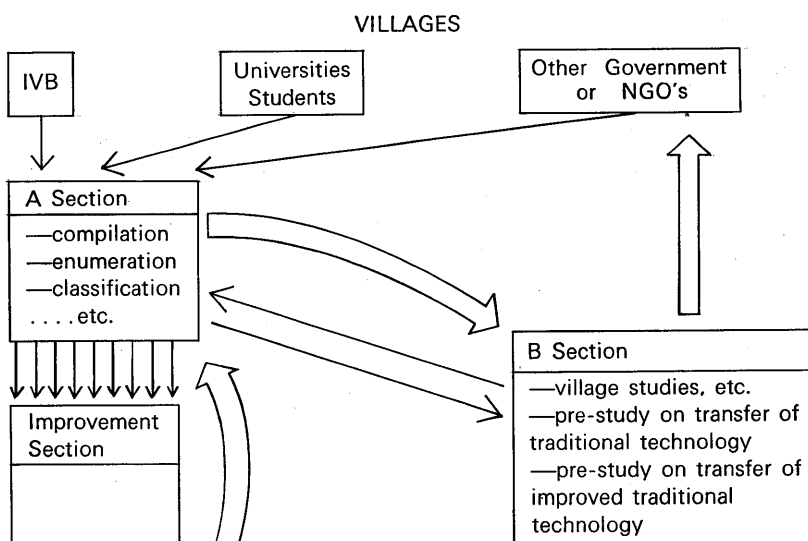
The pilot study will encompass the following aspects:

- (a) Desk study of on-going research on traditional technologies.
- (b) Village study:
  - (i) socio-economic and cultural;
  - (ii) relationship between the technology and socio-economics/culture; and
  - (iii) relationship between the human and natural resources, etc. (water ecology, etc.).
- (c) Identification, inventory-taking and evaluation done by "A" section (improved).
- (d) Reconnaissance about the possibilities of "transfer" (in one year one can obtain only the feasibility at maximum).

#### 2. Selection of the Villages

Three villages will be selected.

#### 3. Programme of Research Activities



#### 4. Timetable

	1978											
	1	2	3	4	5	6	7	8	9	10	11	12
1. A Section												
2. B Section												
—Desk study												
—Village study												
—Analysis/conclusion												
—Seminari:												
local/village												
national												
—Study on transfer of traditional technology												
—Study on transfer of improved traditional technology												
3. Improvement Section												
4. Publication												

**Pilot Study 2: Iran**  
**Environmental Sciences and Natural Resources Cluster, Bu-Ali Sina University**  
**(Duration: one year)**

**1. Objectives of the Pilot Study**

To study, in the context of the on-going Khorram-Rud (Green River) Valley Ecodevelopment Pilot Project, selected traditional technologies in terms of their continued utility and suitability for transfer to other areas.

**2. Selection of the Villages**

Two villages will be selected in the Khorram-Rud project area (probably the villages of Kohnush and Ghal'eh-Astijan) as well as the Turk-Hasherand nomadic tribe that passes the summer in the area. However, for parts of the study, such as the ganats and the plant survey, the entire zone of the valley and the tribal migratory zone will be included.

**3. Timetable**

October 1977: Staff seminars and preliminary field visits to clarify objectives of the study, and to prepare the methodological approach for field studies.

November to December 1977: Intensification of field studies before the cold season.

January to March 1978: Intensive dialogues with local population in selected villages and field work in winter pasturing grounds of the Turk-Hasherand nomadic tribe.

April to September 1978: Continuation of field work in villages and migratory route of the tribe.

October 1978: Report of the pilot study.

**Pilot Study 3: Japan**  
**Institute of Oriental Cultures**  
**(Duration: one year)**

**1. Objectives of the Pilot Study**

Since Japan is almost industrialized and modernized, the role of the Institute in this project might be the examination of what would happen should modern technology fail and whether traditional technology has a value even in modern society.

**2. Programme of Research/Activities**

The programme will consist of following studies.

- (a) Village studies on some villages in Miyazaki Prefecture and Iwate Prefecture, where the infant mortality rate is the highest in Japan. There is a unique method of nursing infants in Iwate called *izume* or *ejime*, which means putting infants in a bamboo basket. Therefore, the focus of research would be on the sub-system of the management of the infant-mother relationship.
- (b) Desk studies based on books and research on Japanese agriculture written in the Edo period as well as a comparison with books and research on Chinese agriculture in the same period.
- (c) Combined village and desk studies focused on land and water technologies now existing in Miyazaki Prefecture and Iwate Prefecture, compared with the technologies cited in the above-mentioned works on agriculture in the Edo period, written by clans in neighbouring prefectures. This comparison is important because there have been no comparable books written in the Edo period on agriculture in Miyazaki Prefecture (the Hyuga clan) and in Iwate Prefecture (the Rikuzen clan), although much material exists on the agriculture of their neighbouring clans like Bungo, Tsugaru, etc.

**3. Availability of Human Resources**

The Director of the Institute and three of his assistants could engage in all the research.

**4. Availability of Financial Resources for the Study**

Some of the Japanese foundations could be approached to give support to the research by the Institute.

## **5. Dissemination Strategy**

We can publish the reports on the above-mentioned research as the Institute's research papers or as part of the Gakushiun University monograph series.

**Pilot Study 4: The Philippines**  
**Development Academy of the Philippines**  
**(Duration: one year)**

**1. Objectives of the Pilot Study**

In broad terms, the Philippine proposal addresses itself to the agriculturists of the non-irrigable, upland areas which employ variations of slash and burn cultivation methods. More specifically, the project proposes to undertake studies and formulate action projects considering the following:

- (a) effective stabilization of *kaingin* (slash and burn) systems by improving the cropping practices, lengthening it and, conversely, shortening the fallow periods through the introduction of suitable efficient technological packages;
- (b) increased production of the *kaingin* areas through improvement, upgrading, sharing and revival of traditional technology;
- (c) better understanding of the socio-cultural, economic, ecological and political aspects of upland communities in order to arrive at more meaningful policies; and
- (d) effective designs of technological mixes for production, social services and human resource development applicable to upland areas which could improve the overall quality of life.

**2. Selection of the Villages**

The proposed villages are:

- (a) Quinlogan, Quezon, Palawan;
- (b) Mariwara, Narra, Palawan; and
- (c) Cabigaan, Aborlan, Palawan.

**3. Human Resources and Facilities**

The human resource components of the STT Philippines Project may be envisaged at three levels:

- (a) the village—local specialists, artisans, craftsmen, model farmers;
- (b) the institutions—Palawan National Agricultural College, Aborlan, Palawan; National Science Development Board; Technology Resource Center (note: See Vol. II of STT Philippine Proposal, Institutional Profiles); and
- (c) the project team, jointly staffed by CDP-DAP and PNAC—full-time members; anthropologists/rural sociologists, foresters, engineer, artist/photographer, cartographers, physical/regional planners, agricultural economist, systems analyst, community organizers/CD workers, and

agricultural extension workers: part-time members; public health specialist, chemist/chemotherapist, livestock consultant, craft technician, and fisheries technician.

#### 4. Project Monitoring

Ideally the project monitoring work should be done on three levels—the village, the DAP and the UN University. The details of the project monitoring system (PMS) will be finalized as soon as the University finalizes the STT project. On the national level, the PMS unit of the Countryside Development Program of the DAP will back up the STT project team.

#### 5. Timetable

The STT Philippines project is divided into the following work phases.

##### (a) Phase I

The project development phase was undertaken from July to the end of September. This included the following activities:

- (i) bibliography work;
- (ii) identification of related DAP projects which can augment the STT Philippines project;
- (iii) preparation of topic outlines in four areas of concern as a basic guide for the project team; these outlines will subsequently be translated into field manuals;
- (iv) initial contacts with institutions undertaking similar activities; and
- (v) preparation of community survey form.

The STT Philippines project is ready for implementation.

##### (b) Phase II

The pilot phase basically corresponds to the activities for Phase 1.

- (i) Desk Study 1: This is on-going and should be sustained all through the two-year programme and hopefully beyond; this entails not simply a listing, but periodic up-dating of research and action projects. Research integration activities based on Desk Study 1 should lead to the utilization of these research results. The logical sequence of these activities is envisaged as follows:
  - a. research integration—bibliographic listing, annotation, project profile, institutional directors and master list of technical specialists and resource persons;
  - b. trends reports—bibliographic essays, situation/trend reports; and
  - c. research utilization.
- (ii) Desk Study 2: Taking inventory of both traditional technology and modern (intermediate) technology has been going on for three years



under the Intermediate Technology for Rural Transformation Project of the DAP. The inventory for traditional technologies will be an added component to these activities. The project team has worked out an eight-digit index system for traditional technologies which will allow computerization for storage and retrieval. Desk Study 2 should be done on two levels—nationwide and barrio-level. Both should be an ongoing concern even beyond the pilot phase or the two-year phase.

(iii) Technical Review: This will be done on two levels:

- a. preliminary assessment by a village panel composed of the would-be users, local specialists (craftsmen, artisans, experienced farmers) and other local technicians;
- b. technical screening by a technical panel from the agricultural schools and the National Science Development Board.

Technical review could be done on an ongoing sustained basis and/or intermittently, as the need arises. Technology packages which pass the village and technical panels will undergo a pre-testing/experimentation in the village. This pre-testing becomes the basis for village seminars and the staging point for setting up the village technological station or laboratory under the auspices of the agricultural colleges. Manuals of technological innovation will result from these experiments. Where necessary, feasibility studies will be prepared. This phase should be under way by the third month.

(iv) Technology Delivery System: A system of sharing and transfer process will be designed through dialogues and village seminars. The delivery system includes:

- a. horizontal delivery—from one traditional area to another traditional area;
- b. vertical delivery—from the modern urban centres to the traditional sectors.

**Pilot Study 5: Sri Lanka**  
**Marga Institute**  
**(Duration: one year)**

**1. Objectives of the Pilot Study**

The pilot study is intended to identify and establish at the national level a network which would form the potential unit for the implementation of the whole project, and to evaluate the effectiveness in the various areas of activities envisaged in the project. It will:

- (a) commence the village studies which would be the central focus of the research, and to examine the socio-economic, cultural and ecological framework of the village;
- (b) inventorize and screen traditional technology at the village level within the above context;
- (c) examine the feasibility of communicability and transferability of a few selected technologies; and
- (d) help to refine the research methodology and to identify new areas of importance outside the sub-systems in the chart, and also to identify the nature of the relationships at the village level between the subsystems.

**2. Selection of the Villages**

- (a) Ten villages have already been identified in the on-going studies, which are being co-ordinated by the Institute. In addition, two more villages will be selected, one each from the Negumbo district on the south-west coast, and the Kandy district, which is in the central hills.
- (b) The villages are selected with a view to being:
  - (i) the "locale" where traditional technologies will be identified;
  - (ii) the testing ground for technologies selected with a view to transfer;
  - (iii) the venue for training classes, workshops and seminars at the field level;
  - (iv) laboratories where controlled experiments of transfer and diffusion will be carried out; and
  - (v) the centres containing the communication training unit, documentation unit and research and development group.

**3. Availability of Human Resources**

Two researchers will be centred in the two new villages selected. Their train-

ing will be conducted utilizing the experience already gained in the studies that are conducted in the ten villages. Additional training will be given to the investigators conducting the ongoing village studies. The total period of training is expected to be around three months.

#### 4. Availability of Financial Resources

No funds have yet been received from any funding source, after implementation of the STT project at the village level. However, the budget which will be requested from the UNU will supplement the organization overheads and the village level data base available at the Institute through its various studies conducted at the village level.

#### 5. Programme of Research Activities

The focus will be on the twelve sub-systems, with special emphasis on recycling, mixed farming and health. The methodology will be as has been spelt out in the document, and the village studies which are already available with the United Nations University. The desk study on ongoing programmes, available writing and film will be conducted through researchers by looking into various government and non-governmental agencies whose programmes have some relation to the total STT project.

#### 6. Timetable

The project will commence in October 1977, with village studies which will continue for one year. The first desk study on on-going research, bibliography and identification of traditional technologies from available writing and film, will commence in January 1978, and will be completed in June the same year. One national seminar will be held around June 1978. Of the four village studies, two will be held in December 1977 and the other two in September 1978.

**Pilot Study 6: Malaysia**  
**Malaysian Sociological Research Institute**  
**(Duration: one year)**

**1. Objectives of the Pilot Study**

The specific objectives of the pilot study in Malaysia are the following:

- (a) to establish a network of institutions, groups and individuals interested in, and relevant to, the area of activities of the STT project;
- (b) to carry out longitudinal field studies at the village level to research into the socio-economic, cultural and ecological contexts out of which the complex of traditional technologies arise;
- (c) to establish a basic relationship of mutual trust between field researchers and villagers as the basis for a genuine two-way exchange of knowledge and information, and for establishing responsiveness and awareness among the villagers to traditional technology;
- (d) to identify, evaluate and make a detailed inventory of traditional technologies on the basis of village studies; and
- (e) at the end of the pilot study period, to prepare a report on the feasibility and methodology of the process of the actual dissemination and sharing of traditional technologies.

It is envisaged that through the pilot study phase a clear concept of traditional technology would emerge, i.e., its meaning and characteristics, its relationship with the socio-economic, cultural and ecological fabric of the communities, and its potential role in need-oriented self-reliant development at grass roots level through its dissemination. It is also envisaged that through the pilot study phase an infrastructure of technical expertise would be established through the network of institutions, groups and individuals, and the basis for responsiveness of villagers would be laid. These are aspects essential for actual dissemination at a later stage.

**2. Selection of the Villages**

Three villages will be selected for intensive field studies. The selection will be based on the main criteria of occupational patterns; degree and type of exposure to modernization; ethnic communities (to take into account the ethnic composition of the Malaysian population). Tentatively, the villages selected are:

- (a) a Malay cockle-producing village in Sebarang, Penang;
- (b) a Chinese fishing village in Perak State; and
- (c) a village from a mixed agricultural district on Penang Island.

**3. Programme of Research Activities**

The focus of research will be:

- (a) on the general level, the relationship between traditional technology and the social and ecological systems in the communities; and
- (b) on the specific level, the technologies which are related to the production systems in the villages selected (particularly marine/riverine and agricultural food production).

The research will be oriented towards the eventual transfer of traditional technologies which are deemed to be useful, safe, appropriate, in balance with the ecology and social structures, and transferable.

The methodology used in field research would be mainly participant observation, with field researchers involved in a dialogical process with villagers. Through its own field experience, the Institute has come to the realization that only through identifying with, and participating in, the activities and ways of life and work of the villagers can a real understanding be gained of village situations. The participant and dialogical methods are even more important in a project like the STT project in which awareness and response from the villagers is necessary, especially for the feasibility, for the transfer aspect of traditional technologies. As part of the dialogical process, seminars will be held at the village level, as well as training seminars for field researchers (before the commencement of field work) and an evaluation seminar for the field and technical researchers (towards the end of the pilot study phase). Questionnaires will also be used wherever needed, especially in the collection of socio-economic data.

#### 4. Human Resources and Facilities

A major objective of the pilot study phase is to establish a network of human resources and facilities in universities, research institutes, public associations, individuals, and government agencies to contribute to various aspects of the project. The institutions include the following.

- (a) Universiti Sains Malaysia (Centre for Policy Research; School of Biological Sciences; School of Social Sciences; School of Housing, Building and Planning)
- (b) Consumers Association of Penang
- (c) The Malayan Nature Society
- (d) The Malaysian Fisheries Department
- (e) The farmers associations
- (f) The fishermen associations

For the implementation of the field studies, graduates and graduate students with field experience will be co-ordinators in each village, assisted by field assistants selected, if possible, from within the selected villages.

## 5. Availability of Financial Resources

The MSRI can provide some secretarial services; it is envisaged, however, that external financing is required for the bulk of the financial resources required for the activities of the pilot study phase.

## 6. Timetable

Preliminary groundwork for the Pilot Phase started in July 1977 and the Institute is able to launch the Phase proper in November 1977. The schedule of activities is planned as follows for the year November 1977 to October 1978.

1977	November	Finalizing conceptual framework and scope of project; establishing of network		
	December	Selection of three villages for study; preliminary "familiarizing visits to villages	Recruitment and training of village researchers	
1978	January	Longitudinal village studies; familiarizing visits		
	February	Longitudinal village studies		
	March	Longitudinal village studies		
	April	Longitudinal village studies		
	May	Longitudinal village Studies		
	June	Longitudinal village studies	Village seminars	Screening
	July	Longitudinal village studies	Village seminars	Screening
	August	Longitudinal village studies	Village seminars	Screening
	September	Longitudinal village studies	Education	Screening
	October	Longitudinal village studies	Final report	

It is envisaged that the longitudinal village studies will involve various stages: the selection of the villages and preliminary "familiarizing visits (in December 1977 and January 1978); research into the social, cultural and ecological conditions as well as preliminary identification of technologies (February to

April 1978); identification, inventory-taking and village assessment (May to October 1978). Screening of the technologies by a technical panel will run continuously with inventory-taking and is expected to take place in June to September 1978. Village seminars, two in each village, are scheduled for June to August 1978, and in September 1978 an evaluation seminar for the technical panel and field researchers is scheduled. The final report (scheduled for finalizing in October 1978) would include a feasibility report on the transfer aspect of traditional technology.

## 7. Monitoring of Research

To monitor the progress of the research, the Malaysian Co-ordinator will make regular visits to the selected villages, and there would also be regular meetings (on at least a monthly basis) of the field researchers and the Institute project co-ordinating unit. Field researchers will be asked to keep daily field diaries and submit regular field reports on the progress of the various aspects of the research. The viability of the traditional technologies identified and inventorized will be monitored by the technical panel.

## 8. Dissemination Strategy

For the pilot study phase the actual transfer of technology is not envisaged because of the time constraint. However, the groundwork for eventual transfer will be laid during the Pilot Phase. As part of the groundwork, the concept of traditional technology and examples of useful and suitable traditional technologies will be disseminated in the selected villages through:

- (a) village seminars, in which two types of dialogue are expected to emerge, i.e., researcher-villager and villager-villager;
- (b) publication of small booklets demonstrating the operation, mechanism and usefulness of particular traditional technologies, presented in a manner easily understandable to villagers; and
- (c) the establishment of a "skeleton unit" for documentation and storage of materials within the villages.

**Pilot Study 7: Nepal**  
**Development Research and Consulting Group**  
**(Duration: one year)**

**1. Objectives of the Pilot Study**

The purposes of the pilot study are:

- (a) to build a detailed inventory of traditional technologies which appear useful in an economic sense and which have a demonstrable effect on the well-being of the human body;
- (b) to create an awareness of technological transformation by starting a thinking process about the utility of technologies hitherto taken for granted, thereby building up receptivity for eventual transfer of useful technologies;
- (c) to refine the research methodology to be used in the STT project; and
- (d) to establish a national network for research.

**2. Selection of the Villages**

Selection of three villages will be made from the north, centre and south, according to the criteria stated in the Nepalese Project Proposal.

**3. Programme of Research Activities**

The research focus will be on:

- (a) mother and child care;
- (b) preventive and curative medicine;
- (c) management of the climate;
- (d) identification of traditional technologies;
- (e) detailed study of the socio-cultural and ecological background; and
- (f) study of feasibility of communication and transfer screening.

**4. Human Resources**

- (a) National Development Service (Graduate) students
- (b) Trained local leaders
- (c) Local Development Department officials
- (d) Panchayat Training Institutes

**5. Financial Resources**

The financial resources will consist of a local contribution for:

- (a) the services of the Project Co-ordinator;
- (b) the secretarial services; and



- (c) the services of a screening panel (National Council for Science and Technology).

## 6. Timetable

October	Selection of three villages for study		
November	Finalization of networks	Training seminar of village researchers	
December	Longitudinal village studies	Circulation of reports on training seminar	
January	Longitudinal village studies		
February	Longitudinal village studies		
March	Longitudinal village studies	Village seminars	
April	Longitudinal village studies	Village seminars	
May	Longitudinal village studies	Preparation and circulation of reports on village seminars	Screening panel
June	Longitudinal village studies		Screening panel

## 7. Dissemination

- (a) Village seminars; and  
(b) Village laboratories.

**Pilot Study 8: Thailand**  
**Thai Khadi Research Institute, Thammasat University**  
**(Duration: one year)**

**1. Objectives of the Pilot Study**

In general, there are two aspects of the pilot study.

- (a) Identification and establishment of networks. That is to establish contacts and seek co-operation from various institutions doing rural development work in the country.
- (b) Selection of three specific villages for intensive research with the following aims:
  - (i) to study the social, cultural, and ecological conditions with a view to seeing the suitability and efficiency of existing technologies as well as the prospect for sharing and transferring of technologies;
  - (ii) to identify and make an inventory of existing technologies and their relationship to the environment; social, cultural, and ecological;
  - (iii) to create awareness on the part of villagers of their own potential, and the use of their resources in order to be prepared for sharing technologies; and
  - (iv) eventually, from the above study, to try to estimate the possibilities and feasibility of communicating and transferring technologies.

**2. Selection of the Villages**

The villages to be selected are in the area of Mae Khong Integrated Rural Development Project, in which Thammasat University is already taking a part. The criteria for selecting the villages are:

- (a) varied distances from major urban centres and thus the amount of influence from the modern sector will be different;
- (b) types of land-use and occupations of the population are varied;
- (c) co-operation of villagers, including the existence of united community leadership; and
- (d) politically possible, i.e., acceptable to the Ministry of Interior, and co-operation of the governors of the provinces.

Tentatively, there will be one village in Samut Sakhon, one in Suphanburi Province, and one in the Phitehaburi Province (all west and southwest of Bangkok with distances varying from 70 to 200 kilometres).

**3. Modality of the Research**

The focus of the research will be on recycling techniques (9), intensive and

mixed farming practices (10), harvesting water for agriculture (8), providing preventive and curative medicine (4), and augmenting and consuming nutritional intake (1).

#### 4. Human Resources

- (a) Two researchers: one anthropologist and one sociologist;
- (b) One assistant researcher, one anthropologist;
- (c) Experts, particularly in the field of natural science;
- (d) Three village workers, graduate students selected by the Department of Community Development; and
- (e) Village leaders (monks, local headmen).

#### 5. Timetable

##### (a) Village work

- (i) November 1977: selection of the villages; consultation with MIRD, the Department of Community Development, the Governor of the provinces, and the abbots of the villages, and inspection of the villages;
- (ii) December 1977: selection and training of the workers in the villages with the co-operation of the Department of Community Development; and
- (iii) January 1978: posting of the workers in the villages.

There will be monthly visits by the researchers to the workers in the villages. They will evaluate the work of the workers and give advice and suggestions for further work.

April 1978—first village seminars

August 1978—second village seminars

November 1978—third village seminars

December 1978—analysis and evaluation, writing up of reports

##### (b) Desk study

The duration of the desk study will be from December 1977 to April 1978. April and May will be devoted to the writing up of the complete list of institutions and activities.

## **Outline for the Presentation of Pilot Studies**

### **Pilot Study Rationale**

1. Conceptualization of traditional technologies and background conditions to be studied
2. Purpose of the pilot study and policy relevance

### **Research Framework**

1. Feasibility of the pilot study in the research unit
  - (a) Timetable of different activities during the pilot study
  - (b) Identification of a specific village following the criteria discussed at the meeting
  - (c) Availability of human resources to conduct the research in the village
  - (d) Availability of financial resources for the project
2. Modality of the pilot study in research
  - (a) Type of research focus and methodology
  - (b) Dissemination strategy
  - (c) Monitoring of research
3. Budgetary elements

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## **APPENDIX III: PROJECT PROPOSAL ON THE SHARING OF TRADITIONAL TECHNOLOGY**

by Chandra H. Soysa, Consultant to the United Nations University

### **Introduction**

1. The Project on the Sharing of Traditional Technology (STT) is a programme of activities which will constitute one area of action and research within the Project on Technology Transfer, Transformation, and Development (TTTD) which has been designed by the United Nations University.
2. The STT project is designed to:
  - (a) provide an immediate resource augmentation to the poorest without the provision of direct capital inputs or the introduction of literacy programmes;
  - (b) contribute to an understanding of the nature of societal and structural changes which generate, within poor communities, the capacity and ability to effect innovative technological change; and
  - (c) investigate the possible linkages between traditional technology and modern technology in the process of rural transformation.
3. It will attempt to achieve these objectives by a practical programme of exchanging the knowledge of pre-tested traditional technologies among selected rural communities, and by a concurrent research programme which, through short desk studies and longitudinal village studies, will examine and monitor the societal and structural changes within which the technological changes occur.
4. The STT project is also designed to supplement the efforts of those individuals and institutes who, especially in the developing countries, are particularly involved in:
  - (a) the scientific improvement of traditional technological techniques;
  - (b) the generation of technological capacity and the development of research and development capability; and

- (c) the controlled transfer of technology from the industrially developed countries, and the effect of such transfers on human and social development.
5. It will supplement these efforts by providing an additional area of technological interactivity which, especially at a national and at a regional level, will have the potential for the establishment of backward and forward linkages to their programmes.
6. These linkages could be designed so that that the STT project could contribute to a clearer understanding of the nature and patterns of technological activity in developing countries, and the process of technological change within them.
7. The implementation of the objectives of the STT project will be achieved by organizing networks, both in the developing and developed countries, of field workers, concerned scholars, institutes, and organizations, both governmental and non-governmental, who will work within a global programme of interdependent research and action-oriented activities under the co-ordination of the United Nations University's Human and Social Development Programme (UNU/HSDP).
8. The STT project could not have been conceived within the framework of traditional knowledge or technology because the implementation of an effective programme of sharing traditional technology has become possible only through the global communication infrastructure which has now been created by modern technology.
9. It is, therefore, a project which can, by its very existence, demonstrate the dynamic co-existence and interaction of the traditional and modern sectors.

## A

10. In the developing world the generation of technological capability and the transfer of technological knowledge has hitherto taken place, especially at a national level, in an uncoordinated and fragmented fashion, with the result that very few developing countries have achieved the capacity for an organic and integrated technological response to their resources.
11. This situation has been further aggravated by the fact that technological capability, and the transfers of technology, are controlled by minority (élite) groups. Since the social systems and structures of power usually direct technological development to suit the needs as they are generated by their own structures, which in developing countries are dominated by the needs of these elite groups, the demand pattern of these groups has often shifted the technological response of developing countries further away from the real needs of the people.



12. The end result of this process is that the structures of technology, as they exist in developing countries, do not exist and grow together within a homogeneous framework. At one end are the uncoordinated and fragmented structures of modern scientific knowledge, and at the other, often in opposition, the holistic but now fragmented body of traditional knowledge and technology.

13. The dialectic process of interaction and interface that is envisaged in this project is one in which the technological activation at all levels of the society leads, in the long term, to a harmonious integration of the traditional structures in the structures of modern science.

14. Therefore, the first, even preliminary, technological requirement of a developing country is, it is here proposed, the establishment of an infrastructure of technological awareness by which the whole of its society is linked in a hierarchy of interactions; an infrastructure which will permit the aggregation of cumulative and progressive stocks of technological knowledge at each level of its societal framework.

15. Then, with adequate linkages, this infrastructure could produce checks and balances to provide the technological responses which will enable the country to develop, with self-confidence, its own technological style so that it may, ultimately, play a self-reliant role in a technologically interdependent global community.

16. Today it is a fact that technological responses to national and even global resources are in the hands of small groups who, both at the national and international level, control these resources to satisfy a demand pattern created in their own interests and who thereby prevent the technological participation of the masses in the exploitation of these resources. Since the nature and extent of a country's technological response to resources and especially the quality and quantum of the participation within it are central to self-reliant social and economic progress, it is, therefore, essential to improve the technological capability of these masses so that they may achieve, by an integrated and dynamic response to their resources, the technological participation in the process of achieving the human and social development they seek.

17. To improve the technological capability and innovativeness of this technologically non-participant mass of the global community one has to seek them in developing countries, and improve, in effect, the technological capability of the rural poor who in fact constitute the greater part of this mass. These rural poor are the 90 per cent of that half of the world's population who continue to depend on agriculture but who live in developing countries on a little more than half the world's agricultural area.

18. Though straddled by the industrial world which continues to marginalize most of them, modern industrial technology is a stranger to the lives of at least this billion landless or small farmers who live in the rural areas of the developing countries. In this daily life, or range of "daily necessities", they hardly utilize products of the industrial age. When they do, the industrial products are often utilized for purposes other than for which they were designed, and are often the waste products of the industrial centres. What they do use, if at all, is the fringe of the physical infrastructure provided by modern technology.

19. Most of them, in this sense, still live in the pre-industrial age, and continue to depend on and use, often unmodified, the traditional products and technological techniques which have evolved over a long period of time, and have been passed down to them, within their community, by their ancestors.

20. These billion, the rural poor, are the real poor of this world. Half of them are severely malnourished, and a quarter of this billion are children under five years of age who suffer from some degree of malnutrition; and at the bottom of this poverty pile are some millions of people living in isolated rural communities to whom a slight change in living conditions often means the difference between survival and death. It is to these communities that the transfer component of this project is particularly directed; communities which are without access to capital and are often illiterate, and who are (therefore ?) unable to develop the technological responses to counter, especially, the effects of the demographic and environmental changes that are taking place within and around their communities.

21. The United Nations, and governmental and private agencies have been recently involved in studies and action programmes which seek to solve the technological problems of the poor—e.g., by attempting to transfer various types of technology to them (hard, soft, intermediate, appropriate, etc.) through urban scientists who are using the most advanced technological knowledge to improve traditional technology, and through others who seek to establish direct backward and forward linkages between the rural poor and the urban centres of scientific research and development.

22. However, most of us are agreed that the marriage of science and technology to the needs of the poor will have, ultimately, to be the result of political action which will lead to structural changes. But while the structural changes are being fought for, and while various programmes are demonstrating the suitability of the marriage partners, this project concentrates on a small supplementary area, i.e., the building up, among the rural poor, of a self-reliant base for, and of, technological awareness.

23. The achievement of this technological awareness, and the gaining of in-

sights into the variables which affect the process of perceptualization of especially the advantages of technological change, underlie the objectives of the proposed programme of activities, while the over-all immediate practical objective of the project is to build up a more technologically efficient response of the poor to their environment so that it may lead to a better quality of life within the immediate resources available through the fuller utilization of these resources: by innovation, inventiveness, and the generation of their own research and development capacity.

24. It will attempt to create this awareness of the benefits of technological change by providing an immediate non capital-consuming resource augmentation. This resource augmentation will be provided by an identification, and transfer, of selected technological resources of rural communities to other rural communities; but it will be a programme of sharing without loss, and exchanging without sacrifice, so that, by the co-ordination of the technological resource transfer, an increase in the total stock of knowledge among the rural poor can take place, and result in an immediate, and perhaps significantly high, increase in the quality of their lives.

25. It will be, therefore, a sharing process which will be minimally disruptive of their societies, and is also a process which can take place effectively and equitably only among the economically poorest who produce little or no surplus of any agricultural or industrial product.

26. This project proposal is designed to enable the participants in the programme of activities to develop a structured exchange by, and among, the rural communities of their own indigenous traditional technological knowledge or the perceptualization of that knowledge. By indigenous traditional technological knowledge is meant those items of knowledge which have often, throughout centuries, accumulated in rural communities, to form a seemingly unstructured and uninstitutionalized collection of endogenous solutions to local problems.

27. These solutions, transmitted most often through an oral tradition, are based on direct experience or observation alone, and yet remain as solutions evolved from, and screened intensively through, long practical experience but without application of the sophisticated concepts or the theory of modern scientific knowledge.

28. The sharing and transfer of existing traditional technology is envisaged throughout this proposal as not being an end, but as a means to an end—the end being to help in the creation of a new mix of technology which is appropriate to the social, political and economic style of the development individual countries may choose.

29. This new mix of technology should enable countries to adapt, through their

own research and development, both traditional and modern technology, to create a technological infrastructure where the criteria for the choice of a technology is not whether it is modern or not. All types of efficient rational technology, both traditional and modern, should exist side by side with selected emphasis—for development does not mean reaching the high points in a technological continuum; development should lead to the full utilization of available resources, which has, therefore, to include those which are provided by traditional technology.

## B

30. In addition to the practical sharing process, this proposal provides for a series of research and action-oriented programmes of activities which it is hoped will help rural communities to gain insights into the nature of the societal and structural changes that underlie, and result in, the development of a self-reliant attitude to their own resources, and which will also lead to the establishment of an infrastructure of technological awareness.

31. Both the practical and research components of this project are directed towards the objective of seeking the key elements for, and achieving, the evolution of a first stage of technological awareness among the rural poor, the existence of which stage could help to contribute to the progressive formulation of a more participatory process for the current transfer of technology from industrial to pre-industrial communities.

32. The project will seek to ascertain whether this first stage of technological awareness will achieve the following objectives:

- (a) result in the generation of an internal dynamic for technological change in traditional rural communities;
- (b) produce a knowledge base for innovation in educational curricula which could be linked to research and development;
- (c) result in new resources which create additional goods and services;
- (d) contribute to a pattern of development which enhances the quality of life;
- (e) establish horizontal linkages among traditional rural communities at the national, regional and global level.

33. The research and action-oriented programmes of activities will, therefore, be directed so that they could be evaluated in terms of the following specific components of the objectives set out above.

- (a) The generation of an internal dynamic for technological change in traditional rural communities.
  - (i) That the interaction among rural communities of selected similarity will result in the removal of the static quality of their local technological response.

- (ii) That this removal will impart to these communities a capacity to generate internal change.
  - (iii) That the first technological innovators could emerge more easily in rural communities when the technology introduced or adapted is traditional, as it would not disturb the existing structures to any significant extent.
  - (iv) That the preliminary involvement in, and awareness of, the technological knowledge and resources of other rural communities will permit, and even encourage, the acceptance of innovators by the rural poor.
  - (v) That the adoption of other traditional technologies will lead to the adaptation of their own technology through a perception of the new and increased resource capacity of existing alternate uses of identical or similar resources.
  - (vi) That the process of the adaptation of shared technology will by itself counter the existing fragmentary nature of technological knowledge and lead to the improvement and development of an "understandable" technology which, absorbed into a rural community, would be criticized, refined and developed by that community before its final adaptation.
  - (vii) That this first stage of technological interactivity involving, as it will, a reappraisal of their own technology, will result in an immediate generation of a positive interest in, and a demand for, technological research and development.
- (b) A knowledge base for innovation in education curricula which could be linked to research and development.
- (i) That this stage of technological knowledge could be linked to non-formal education in rural communities.
  - (ii) That the linkages between elementary applied science and the technology of the production of a community's daily necessities could develop a strategy for scientific education in rural communities.
  - (iii) That the separation of the hard core of verifiable science and the analysis of the scientific content of traditional technologies could be used for education, and that this scientific basis could then be used to generate qualitative changes in traditional technology which would, in turn, give rise to local research and development capability.
  - (iv) That this activity will provide an avenue for the new rural élites to utilize their academic knowledge in familiar territory: a crossable bridge for the scientists of developing countries.
  - (v) That the holistic approach of traditional rural technology could expand the frontiers of human knowledge.
  - (vi) That the provision of the incremental scientific knowledge required by the "growth" of indigenous technology would provide a vocation-

al/technical component in the transfer process which could be extracted and developed into an employment-generating programme.

- (c) New resources which create additional goods and services.
  - (i) That the new resources obtained from the sharing of traditional knowledge will develop alternate technologies and new consumer products in the rural areas, and that this will result in a transfer process very different from the process which seeks to make available in the rural sector cruder and cheaper versions of what is available in the modern sector.
  - (ii) That this stage could be a vital element in the generation of rural employment promotion, by increasing the quality, quantity and variety of goods produced by rural communities for consumption and sale.
  - (iii) That this technology will promote the appreciation of local products, introducing an element of wide variety which, in turn, may be capable of fostering new demand patterns within these local communities which could stem the mass inflow of nonessential goods from the industrial centres.
  - (iv) That the growth of social markets could be the basis for the emergence of small and dispersed production units in these communities.
  - (v) That the very nature of the production and marketing procedures will replace the possibilities of the continuing inequity of the middleman in rural communities by lowering the degree of his importance due to a diversion of the production and marketing links from those which are now essentially between the rural and urban centres.
  - (vi) That these units using renewable local raw materials and using only modified traditional skills with little modern knowledge could soon even develop into mobile production units which could periodically work collectively in rural communities outside their own, e.g., for the construction of rural housing.
  - (vii) That these micro-economic activities at the rural base could forge linkages to the socio-economic and political decision making at the national centres.
- (d) The contribution to a pattern of development which enhances the quality of life.
  - (i) That the transfers of traditional technology, on account of its organic character, will be able to preserve and improve the quality of life while increasing efficiency; that it will not disrupt the complex skill structure of traditional communities as might be the case in a more discontinuous process of transfer, e.g., the transfer of crude and simple components of modern modes of production which often attempt to introduce only certain elements of modern production

processes such as speed, quantity, the saving of manual work, etc. at the expense of fineness, quality and variety, which are often an integral part of the traditional process.

- (ii) That such transfers would involve minimal societal disruption, and that this would lead to the growth of new decision-making modalities in rural communities.
- (iii) That this would result in the promotion of self-confidence which will enable rural communities to participate in the decision-making processes of their society even at a national level, by giving them the ability to accept, adapt or reject, according to their own needs, the transfers of the technology of the modern sectors of their own economy to them.
- (iv) That the interaction of traditional technologies could promote a style of local self-development which is based on an integration of processing, production and consumption in small economic units which would thereby induce an increased awareness of the ecological and environmental implications of growth.
- (v) That such an approach would lead to a style of technological development which is humanistic and ecologically sound.
- (vi) That the sharing of traditional technologies, and the growth of technological awareness, would increase the participation, and even the possibility of control, by rural communities of their own production processes.
- (vii) That the lack of a downward-looking authority in the transfer process would encourage the self-reliant growth of these communities; that this lack of an inferior or pupil relationship to the modern sector will direct the attention of the community to a need-based technology that is directed inwards towards satisfying minimum basic human needs.
- (viii) That a continuity in respect of indigenous traditional technology could be maintained even though denying, at the ideological level, the cultural continuity between the past and the present.
- (ix) That the prior use of transfers of traditional technology will not only help to change the nature of, but could even utilize, many of the cultural, social and religious organizations in rural communities which are now often considered barriers to the transfer of modern technology.
- (x) That it will increase the existence, within a society, of matters capable of discussion and reappraisal; that it will maintain the ebb and flow of new ideas from within and without the society, and that it will, therefore, be able to increase the quality of life by helping the participants of the society to be critically aware of its own technological dynamic, and thereby increase the creative quality of that society.

- (xi) That it would contribute to the thesis that responsive man should be the micro-end of development strategy, and that the dynamic interaction of the traditional and modern will lead to the development of a socio-economic structure in developing countries which will produce restrained and humanized technologies.
- (e) The establishment of horizontal linkages among traditional rural communities at the national, regional and global level.
  - (i) That the project will provide a new channel of communication to areas and people now becoming increasingly accessible, for example, through improved transport and the extension of formal education.
  - (ii) That the transfer will also provide a new channel of communication between rural communities and establish institutional links between these communities for their mutual advantage. Mechanisms, such as "twinning" villages, could help to form the first vestiges of collective self-reliance at this village level.
  - (iii) That the project methodology, involving, as it will do, the close though indirect horizontal linkages among the rural poor, will promote the concept not only of the individual, but also the collective self-reliance of the poor by the provision of real opportunity to react personally and directly to the technological knowledge of their counterparts within the global community.
  - (iv) That although it has been said that small is beautiful but big is manageable, the extensive and linked use of governmental and non-governmental organizations in this project may demonstrate a new style of management of a global programme which consists of small and scattered micro-activities.
  - (v) That individuals, institutes and organizations, both governmental and non-governmental, working at field level, could establish meaningful linkages among themselves on one common project under the aegis of the United Nations University's Human and Social Development Programme.

## C

34. The three areas of technological response which will be examined in detail are areas chosen because they reflect the basic needs of human life and have been selected because they could demonstrate an unusual and provocative perception of resources available in the village which could be of significant value not only at the individual level but also cumulatively at the community level and even at national levels.

35. One of the objectives of this project is, of course, to release the concept of



technology—as was the concept of development—from the constraints of economic criteria alone; however, at this first stage it would be appropriate to commence the enumeration with those technologies which appear to demonstrate either the capacity of having an immediate technological and economic impact, or those which have a demonstrable effect on the well-being of the human body. Further clusters of responses and technologies related more specifically to the improvement of the quality of life could follow; those could, for example, include responses resulting in the variety of uses (sometimes non-functional) which the identified resources could be put to, or again, increasing the ease with which the resource could be utilized.

### **Responses relating to food**

- (a) The identification of food other than the staple foods of that community—that is, the community's perception of varieties of plants, animals, birds, insects etc. which are utilized as supplementary foods.

These could be looked for among the supplementary foods which are specifically identified for use by different groups within the community, for example;

- (i) infants;
- (ii) adolescents;
- (iii) nursing mothers;
- (iv) invalids; and
- (v) the elderly.

- (b) Modes of production of food: interplanting and multicropping technologies. This section would deal with maximizing land use in a rural community, as for example:

- (i) interplanting with different crops to maximize the use of available sunlight;
- (ii) interplanting and rotation of crops for the maximization and maintenance of the nutritional content of the soil;
- (iii) patterns of cultivation to maximize the use of available rainfall; and
- (iv) agricultural techniques involving a combination of plant, animal, bird and insect life to provide interdependent and/or complementary systems of management of available resources.

- (c) Water management: traditional technologies specific to efficient water management:

- (i) methods of locating underground water;
- (ii) methods of reaching underground water;
- (iii) means of lifting water;
- (iv) traditional methods of foretelling rain, droughts, earthquakes, etc.;

- (v) cultivation techniques in flood-prone and water-logged areas; and
  - (vi) micro-management techniques of economizing available water.
- (d) Recycling technologies:
- (i) use of human excreta;
  - (ii) use of animal excreta;
  - (iii) use of vegetable waste; and
  - (iv) use of varieties of waste by combination, amalgamation and/or processing to produce fertilizer or feed.

#### **Responses relating to care of human body**

- (a) Physical fitness techniques for:
- (i) infants;
  - (ii) children;
  - (iii) adolescents; and
  - (iv) the elderly.
- (b) Preventive home remedies.
- (c) Curative home remedies.
- (d) Methods of maintaining personal hygiene, for example:
- (i) at infancy;
  - (ii) puberty;
  - (iii) childbirth; and
  - (iv) normal personal hygiene—cleaning teeth, bathing, cleaning and washing clothes, etc.

#### **Responses relating to housing/shelter**

- (a) Functional technologies of building and design which integrate the different uses of the components of a house:
- (i) the design of a kitchen;
  - (ii) the storage areas;
  - (iii) the living areas;
  - (iv) the roof;
  - (v) the compound; and
  - (vi) the lavatory.
- (b) Construction techniques of providing:
- (i) ventilation;
  - (ii) light; and
  - (iii) security.

- (c) Indigenous materials and combinations of these materials used for:
  - (i) roofs;
  - (ii) walls; and
  - (iii) floors.
- (d) Indigenous materials used for the manufacture and maintenance of household goods;
  - (i) furniture;
  - (ii) kitchen utensils; and
  - (iii) materials used for maintenance and cleaning.

36. The chart in Appendix IV attempts to demonstrate a further refinement of the above areas of technological responses.

## D

### Desk Studies

37. The desk studies are envisaged as a stock-taking operation in selected areas which will collate and evaluate the existing knowledge base. They will examine the available experience and knowledge and attempt to gain insights into the objectives of the project, especially by perusing available literature and film.

38. There will be three sets of desk studies. The first will identify ongoing projects and studies, the second will examine "lost" civilizations, and the third will study selected communities other than settled types.

39. The first set of desk studies will consist of country studies and will list ongoing programmes of relevant types into which the programme of activities of this project proposal could be built. Apart from the documentation aspect, it will also serve to establish a feedback mechanism and ensure that, later, the communication and dissemination of the results of the STT project reaches those concerned and active in related programmes. This supplementary and incremental effort within related projects can continue for additional impact during and after the STT project.

40. Three regional comparative studies will be made, covering the selected countries in Asia, Africa and Latin America, after institutions in each of the selected countries have completed a country study based on a comparative framework which will be given to them after the project launching meetings.

41. Three regional institutes in Asia, Latin America and Africa will undertake the regional comparative studies. These institutes, after obtaining the country studies by the end of the first year, will then make the three comparative studies by the

third quarter of the second year to enable three regional and a final interregional workshop to be held towards the end of the second year, at which the institutes will discuss their findings and plan the incremental supplementary procedures to selected programmes in the region.

42. The second set of desk studies will spread outside the twenty countries and would in the first two years look into three "lost" civilizations through two sets of studies (i.e., six studies in all).

43. It is suggested that the Andean, Egyptian and early Chinese civilizations be examined, and an attempt made to extract from written literature the recorded traditional (i.e., pre-industrial) techniques and technology which may be of interest to pre-industrial communities of the modern world.

44. The first set of these three broad studies covering the three civilizations could be finished in nine months and the preliminary results made available at the end of the first year. The second set of these studies will commence in the second year, will select a chosen micro-community within the earlier civilizations studied, and examine in detail its technological responses in prescribed areas and the possible underlying reasoning for such responses.

45. These studies will, of course, not merely catalogue what these "lost" technological techniques are, but attempt to explain how and why those techniques evolved in the way they did. They can also identify areas of future research, e.g., areas where there is evidence of highly advanced pre-industrial technology and techniques, the know-how of which we now know nothing.

46. These studies will be designed so that they are relevant to the third set of desk studies which could also spread outside the selected countries. These studies will document the relevant traditional technological techniques of non-settled communities which live outside the normal urban centre/rural periphery relationship, e.g., the aborigines in Australia, the veddahs in Sri Lanka, the bushmen in Africa, the desert nomads and the eskimos, those groups, mainly migratory, who live in relatively small communities in large expanses of desert, jungle or snow.

47. Since one of the micro-causes of extreme poverty is the lack of technological response by rural communities to demographic and environmental change, these communities which are now being marginalized by environmental and demographic pressures require special attention. The studies will examine why precisely, and which, traditional technologies which were previously appropriate and environmentally sound are today not so, and the factors which caused the present imbalance.

48. The findings of the second and third sets of desk studies will supplement

each other, e.g., these will examine the historical examples of inappropriate transfers of even traditional technology to marginal communities and also seek to inquire what, if any, is the present technological relevance of ancient civilizations, e.g., the relevance of technologies which did not use the wheel to communities of today's world who cannot (in desert, jungle or snow) use the wheel.

49. The last desk study, which will be "outside" the first three sets, will be made at the beginning of the third year. It will be a six-month study which will test a set of communication propositions against a set of published diffusion documents.

## E

### Village Studies

50. The longitudinal village studies will be central to this project. Although the development of technology—the development of tools, and the techniques to use them—distinguishes man from other animals, the quantity or quality of the hardware must not be exaggerated in importance to that extent where its acquisition becomes an end in itself in development strategy. The thought process behind the making of tools cannot exist in isolation for it is a process that is the result of the socio-economic structure of man's society, and it is the pressures of those structures that give rise to the thought processes which evolve the technology to change the relationship between the structure and mankind.

51. Therefore, these studies will look at a community's total response to its resource base and monitor how and why technology develops. There will be studies of pre-industrial micro-economies to which are being introduced new ideas, and will be the source of the study of the community's total attitude and response to technological change, innovation and development.

52. There will be one such study in each of the countries selected, which will, when possible, be built into programmes of ongoing village studies, and located preferably where extension workers are already working. The broad comparative framework, designed with the objectives of the project in mind, will have to be agreed upon at the first project launching meetings.

53. The resource base of the villages as exploited by traditional technologies will have to be identified and classified in detail, both as the community perceives its resources and as the modern scientific technician sees the resource base. A complete inventory will be made of the existing traditional technologies and techniques, bench-mark data maintained and any changes monitored.

54. Each study will initially identify the prevailing traditional technologies and

inventorize them in appropriate detail. The community's perception of the resources available to it, and the processes by which it identifies elements in its environment as resources which it is able to use, will be examined.

55. The traditional technologies will be analysed as the product of the interaction of three main elements:

- (a) the pattern of resource use;
- (b) the structure of access to resources in the community on which this pattern is based; and
- (c) the set of relationships between the different socio-economic groups engaged in the exploitation and consumption of these resources.

56. As far as possible the village studies will examine the responses made in traditional technology as components of a total system that was evolved by the community for the use of its resources.

57. The studies will then go on to identify the potential areas for the extension of the frontiers of local traditional technology through the exchanges that are envisaged. This would require and would involve modern expertise which will investigate the resource base and identify the opportunities of resource use which appear to have been missed, and should attempt to ascertain the underlying causes.

58. The next stage of the longitudinal village studies which could commence in the last quarter of the second year would be the comparative regional and inter-regional studies. These will identify the complementarities and possible exchanges among the villages studied, and elaborate a detailed framework for the practical programme of technological transfer.

59. Meanwhile, during the course of the second year, it should be possible to initiate a pre-testing project of traditional technology transfer based on the enumeration of traditional technologies done by the field workers, i.e., outside those drawn from the research component of the village studies.

60. The main project on the sharing of traditional technology should, of course, be done through the network of village laboratories, and should be based on the village studies, after the completion of the comparative studies, evaluation, screening, and pre-testing.

61. By the end of the second year the selected villages should have become laboratories where controlled experiments of transfer and diffusion could be carried out. These should develop so that in the fourth and fifth years they would

become multifaceted centres each containing a communication training unit, a documentation centre and a research and development group.

62. The rural communities within each country could be selected to cover not only the main cultural and ecological zones but to include also a representative variety of rural communities using the criteria of high and low man/land distribution.

63. Within this framework, the selection could be made from two tiers of technological development:

- (a) the first tier could contain villages which are among the least exposed to modernization and are as yet largely at the level of traditional technology; and
- (b) the second tier could contain villages which are at an incipient stage of exposure to modern technology and are beginning to feel the impact of modern inputs.

64. Within these two tiers the selected villages should also represent a range from the more to the less socially and economically disadvantaged rural communities.

65. The purpose of this two-tier selection is to:

- (a) enable the project to explore the linkages between traditional technology and modern technology in the process of rural transformation;
- (b) enable the selection of villages on a traditional technology continuum—from the purely endogenous, through those in contact with other traditional communities, to those beginning to feel the contact with the modern sector; and
- (c) enable the selection of communities with differing potential for social and/or economic integration between themselves and/or with urban centres.

66. The first tier will provide the basic reservoir of traditional technology while the second will serve, in addition, to demonstrate the possible linkages to inputs from the modern sector.

67. All villages, or groups of villages, should, however, have the general characteristic of being micro-economies existing in relative isolation from each other while at the same time being geographically peripheral to the urban centres of the country.

68. Once the varied objectives of the STT project are accepted, or selected from, at the project launching meetings, the research design for the village studies should be formulated by the local institutes according to their own priorities and style, after the comparative framework is agreed upon at the first meeting.

## F

### Enumeration/Assessment

69. This third group of activities is one that should evolve and enlarge with the development of the project. However, the methodology to commence this process is envisaged as follows:

- (a) Enumeration, in addition to that done in the desk and village studies, will be undertaken by varied groups of field and extension workers (see Network III, paragraph 97) who will work on a part-time or volunteer basis.
- (b) The documentation centres for the project will be the national institutes in the selected countries and information from the other countries in the region will be sent to the regional institutes.
- (c) The United Nations University will finance newsletters from the three regional institutes covering the TTTD project and these could be one of the main formal instruments for the recording, classification and discussion of useful and transferable traditional technologies.

70. One of the major problems of this part of the project will be the accumulation of technological trivia, and, therefore, there is the need for continual assessment.

71. A great deal of care will have to be exercised to protect the swamping of untested and unwanted technological trivia on the rural poor. Even though not for the exchange of gold and money, the provision of tinsel and trinkets could severely jeopardize the real growth among the poor of a self-reliant technological infrastructure capable of accepting, adapting or even rejecting the advances of industrial technology.

72. A "screening" process will therefore have to be built in at the beginning of the second year: a process where potentially transferable knowledge is pre-tested for acceptability (e.g., culturally) within the community, for suitability (e.g., medically) outside the community utilizing modern scientific methods, and for moral and cultural suitability (e.g., politically) by a panel of individuals from both within and without the community but within the country.

### Communication/Transfer

73. The process of the communication and transfer of traditional technology, and the communication training input, should also be built into the project as it develops through a series of seminars and workshops. The main purpose of this series of local seminars and workshops will be to evolve a practical and efficient means of communication at the level of the rural communities, with the final objective of finding a means of horizontal communication between rural communities so that there is a continuous ebb and flow of knowledge within them.



74. The programme of seminars will be organized from the village level upwards by the national institutes. The structure at the base will consist of seminars at the village level organized around the village studies and lead up to national seminars. These will be followed by the regional and interregional seminars. This programme of seminars will be the means for a feedback of information from the network of research and other activities for the evaluation and exchange of research findings, and serve as well as the main channel for the involvement and participation of the communities which will take part in the project of the transfer of traditional technology.

75. A new model of communication will have to be formulated; the type of communication process that is envisaged in this project is somewhere between "diffusion" in the sense of unplanned communication of new ideas and "dissemination" in the sense of planned communication.

76. What is sought in the STT project is an imminent change in that members of a social system create and develop an idea (to the extent that they think they have invented it); a contact change because really it is a source external to the social system (not only physically) which introduced the new idea; a selective contact change where the receivers are left to choose, interpret and adopt or reject the new ideas (but where the exposure is not spontaneous or accidental); directed contact change because it is caused by outsiders who intentionally seek to introduce new ideas (but not in order to achieve goals the outsiders have defined).

77. As far as the innovation decision process is concerned, the now out-of-date five-stage cumulative series is preferred as the base for the STT model, i.e.,

- (a) from awareness (first knowledge of new ideas),
- (b) to interest (gaining further knowledge about the innovation),
- (c) to evaluation (gaining a favourable or unfavourable attitude toward the innovation),
- (d) to small-scale trial (with or without adaption), and
- (e) to an adoption or rejection decision,

as opposed to the four-function theory, i.e., knowledge, persuasion, decision and confirmation.

78. After one year's work on the project the elements of a communication model required for the project should be formulated by the research institutes involved in the village studies, and a set of propositions or generalizations submitted.

79. It is then proposed that the special six-month desk study referred to earlier be undertaken to test these propositions against a set of published diffusion documents by a researcher familiar with the documents.

80. Since innovations or techniques cannot be communicated or transferred singly, selected relevant and ancillary techniques will also have to be transferred, although care will have to be taken to maintain "neutrality" of the traditional technology at the moment of transfer and not transfer with it associated structures. Care will also have to be taken to ensure that only related techniques which are incapable of generation by the recipient communities are transferred. It is, therefore, important that the training aspect for the communication process be built in early in the project, at least in the form of small local workshops and discussion groups at the village level which will have to be organized by the research institute doing the village studies. It is suggested that, at the end of the second year, these institutes suggest clear linkages to existing institutions within their countries where this training can then take place on a more formal basis.

81. The forms of communication will have to evolve in the first two years.

82. To begin with, the mass-media channels, the interpersonal channels and the combinations of these as media forums will be used in the second year of the project (e.g., radio forums involving peasants in regular meetings). In addition to these traditional media and even specialized media (e.g., rural television programmes), a very special emphasis will be placed on traditional media for communication, e.g., storytellers, puppet shows, etc.

83. Other forms of communication which may have to be developed during the second year of the project would be especially those which would involve the factor of mobility, for example:

- (a) mobile groups of rural people demonstrating crafts and techniques and discussing their attitudes to their resource base with other rural groups;
- (b) mobile museums which accumulate material while shifting from one locality to another, and mobile displays of artifacts and manufactured items which can be shifted from one museum to another; and
- (c) the establishment of small museums *cum* discussion centres in rural areas which can be the host units for these mobile programmes.

84. In conclusion, this transfer process, when developed, could attempt as far as possible to adapt the Chinese concept of their "emulation campaign" with its five elements: learn from, compete with, catch up with, give assistance to and surpass.

## G

### Networks

85. For the just evolution of an interdependent world, horizontal linkages must be developed among its peoples.

86. At the top, new linkages are beginning to form with the shift from horizontal political linkages to horizontal trade linkages of the international trading and political élite.

87. In the middle, the exchange of scholars, practitioners and businessmen, the development of transnational trading companies and regional social science organizations, increased travel opportunities, training programmes, scholarships and effective mass-media communication are forming new horizontal links between the international middle class.

88. At the bottom, the poor of this world, the peasants, have only the old and indirect political linkage of possible revolution to link them, and this at a time when the international horizontal political linkages are being compromised for trade linkages.

89. The ultimate objective of this network should therefore be to contribute to the establishment of a horizontal network of communication and interaction among the peasants, and also to establish a vertical link through a real demand factor to their national élites.

90. The STT network should therefore work through existing institutional networks at the commencement, endeavour to establish early, within its network, mechanisms which will give not only an adequate degree of participation to the rural communities of the developing world, but also the opportunity to establish among themselves the horizontal linkages which would be of use to them.

91. The network of the STT project would be of two types, i.e., the programmatic operations through associated institutions and the indirect project links.

92. The network for the programmatic operations which will be known as Network I will consist of three social science organizations which are regional in scope, situated in Latin America, Africa and Asia, and several additional organizations which are national in scope.

93. The main operational linkage with the UNU/HSDP will, for practical reasons, be through the three regional organizations, but there could be direct programmatic linkages with the other national organizations.

94. The indirect project links would, apart from meeting the objectives of the project proposal, help to publicize the existence of the project. These networks will be referred to as Network II and Network III.

95. In view of the emphasis now being placed by development planners on the "poorest billion", on the rural small farmer, on a basic needs strategy, the transfer

of appropriate technology, the process of delinking development strategies from purely growth strategies, the emphasis on small scale local projects, and the increasing awareness of developing countries on the need for national and collective self-reliance, the STT project, touching as it does, many areas not now receiving the attention of United Nations agencies, or the attention of the bilateral assistance systems, will enable the UNU/HSDP to achieve a global spread of indirect programme contacts ranging from those of international agencies to those of local village groups.

96. As far as the United Nations agencies are concerned, the possibilities and areas of association, collaboration and supplementary programming and financing of national groups are many and will be referred to as Network II, e.g.,

- (a) UNESCO—The whole of the educational component of the project including new forms of science teaching, new communication models and the training component to reach the most vulnerable groups.
- (b) UNCTAD—Technology centres, research and development, the linkages of international trade to rural agriculture and industrial products produced from networks of small rural communities.
- (c) ILO—The Rural Employment Promotion Programme, in particular, of the World Employment Programme.
- (d) FAO—The whole area of food—the new types of food, cultivation and eating habits; the domestication of plants and animals.
- (e) FAO/AD—The small farmer and the organization of peasants, change agents and action programmes at village level.
- (f) UNICEF—The improvement of the quality of life of children in rural communities—health, nutrition, toys, games, dress, etc.
- (g) WHO—The development of preventive and curative medicine in developing countries—the relationship between traditional and western medicine, nutrition and sanitation.
- (h) UNEP—The effect on the environment of the “development” of rural communities; the possibility of conservation of energy and eco-balance by the production and consumption of energy in defined local units or for agro-climatic areas.
- (i) UNIDO—How this project could be linked to a programme of rural industrialization.
- (j) UNV/UNDP—Involvement of the UN Volunteer programme and the work of the United Nations Development Programme.

97. Network III will be that containing the international, regional, national and local organizations, all of which can be divided into five basic types:

- (a) Those effectively located in developed countries with networks in developing countries but which either require finance for supplementary programmes or have to obtain it with the support of the UNU/HSDP STT project,

e.g., the International Institute of Communication and the Intermediate Technology Development Group, both of which are located in London but have useful developing country networks and linkages.

- (b) Those of the same type but who can obtain from their own funding sources finance for supplementary programmes linked to the STT project, e.g., the National Academy of Sciences, the Agricultural Development Council in the U.S.A., the International Development Research Centre in Canada and the Swedish Agency for Research and Economic Co-operation in Sweden.
- (c) Those, again situated in the developed countries and with finance, who are seeking suitable projects in the developing countries and who would accept for financing projects sponsored by the United Nations University, but fully implemented by institutes/groups in developing countries who could request funds from funding agencies for national projects formulated by them within the overall STT project.
- (d) Those national and regional institutions in the developing countries which have established themselves and would like to expand their activities by entering into and participating in this specific STT project, and who require at least partial financial support from the United Nations University.
- (e) Those national institutes, both governmental and non-governmental, groups and individuals in the developing countries who are surviving in an adverse climate, or are beginning to commence work related to the STT project; those institutes, groups and individuals who seek the umbrella of the United Nations University not only for financial support, but also for legitimacy and freedom of association.

98. The network of institutions in this Network III will have to be built up as the programme proceeds. It would defeat the purpose for which the United Nations University was set up, and also the objectives of the STT project, if in the desire to produce a "turn-key" project it was forced to decide from the "outside" on an extensive global network of existing institutional links.

99. It is essential that, from the outset, the United Nations University Human and Social Development Programme maintains a firm control on the quality of its work for in this very competitive field it is only this which will matter at least to the developing countries. With its limited organization and its declared objectives of developing original and innovative approaches for the implementation of its activities, its desire to facilitate the emergence of academic and scientific communities in developing countries and alleviate the intellectual isolation of persons in such countries, it is essential that the UNU/HSDP establishes the minimum direct programmatic links outside those which may be requested by Network II.

# APPENDIX IV: CHART

