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# **The Social Sciences in Asian Forestry Curricula**

*Tools and Approaches for  
Curriculum Development:  
A Working Paper*

Edited by

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**INTRODUCTION  
TO  
"TOOLS AND APPROACHES FOR CURRICULUM DEVELOPMENT"**

by  
**J. Kathy Parker and William R. Burch, Jr.**

In recent decades, the forestry profession has begun to make major shifts from its custodial traditions toward a more prominent role in local, regional and national development. As forestry, natural resource management, and environmental concerns have moved more into the mainstream of national life, public expectations about the capacities that forestry education is intended to produce have been growing. While investments in forestry education have increased with the rising demand for trained foresters, the content of much of forestry and related social science curricula has not changed at the same rate as the acknowledged technological, social, political, economic, and related challenges of the profession itself. In many institutions, therefore, forestry curricula continue to reflect the same custodial origins and biotechnical visions of the profession. These educational programs often remain virtually isolated from the human context in which the profession is practiced.

Many forestry curricula in Asia today reflect philosophies and viewpoints imposed by western colonialism some 50 to 100 years ago. These models of forestry curricula first addressed production forestry and more recently have evolved to include concerns such as recreation. However, these curricula greatly contrast with the intellectual antecedents of the profession itself that arose in Asia where forestry has been practiced for thousands of years. Returning to these antecedents is a rediscovery of colonial era custodial forms of forestry practice.

Some foresters, most particularly in Asia, have begun to set the pace for the rest of the profession as they have focused their talents on enhancing the social and economic opportunities of the people who use and manage the majority of the forest and tree resources of the region. Today Asian forestry educators are leaders in efforts to broaden curricula and to address the challenges of forestry practitioners, researchers and academics in the region. Many Asian governments have been supporting the creation of new forestry schools, accelerated training of new and existing faculty, and expanded job opportunities for forestry graduates. Some institutions have developed specializations in fields such as social forestry.

The Tropical Resources Institute (TRI) of Yale University implemented the Social Sciences in Asian Forestry Curricula sub-project through a subcontract with Winrock International Institute for Agricultural Development through A.I.D.-funded Forestry/Fuelwood Research and Development (F/FRED) project. The goal of the sub-project was to enhance the preparation of forestry researchers and practitioners through improved curricula which focus on forestry and natural resource-related problems in Asia. Initiated

in June 1988, TRI co-sponsored a number of activities with the Food and Agriculture Organization's (FAO) Regional Office for Asia and the Pacific. Forestry educators, university administrators, and field practitioners from the region met at a workshop in Khon Kaen, Thailand in November/December 1988. They met to discuss priority needs for integrating the social sciences in the region's forestry curricula and identifying the constraints to and opportunities for this integration.

Then in July 1989, TRI and FAO co-sponsored a second curriculum workshop which was held in Pokhara, Nepal. Participants discussed how to implement many of the recommendations from the Khon Kaen workshop and focused on the problems and constraints to curriculum revision at the host institution, Nepal's Institute of Forestry where this training workshop was held.

During the course of these activities, participants have emphasized time and again that because of its central role in defining the identity, organization, and program of a faculty and profession, curriculum development is a particularly sensitive topic. It is not easily amendable to external advice, to predetermined models, or even to consensual judgments among schools. It is a topic that responds to differential growth of subject matter, to changes in public expectations about what a forester should be and do, and to the emergence of concepts that reorient curricular priorities without disrupting the coherence of a forestry school. Participants also agree that while broad consensus exists about the need for change, little consensus exists about the specific kinds of change that are required.

This volume reflects these concerns. It is one of a series that has been produced as a result of this sub-project. Specifically, this volume serves as a "tool kit". The contents are not intended to serve as models; rather they are illustrative examples or potential operational guidelines covering a variety and range of tools available for revising and developing forestry education in the Asia region. The sections contain the following materials:

- o Range of Potential Innovations for Curriculum Development--operational guideline on possible actions that curriculum planners might take to address such concerns as faculty development, strengthening of existing curricula, networking to improve curriculum development, and evaluation of curriculum.
- o An Approach to Analyzing Asian Forestry Programs and Curricula--descriptions of the forestry education programs and curricula at the University of the Philippines at Los Banos (UPLB) and the Institute of Forestry (IOF), Nepal.
- o Curriculum Revision Process--Some Examples of the steps in the curriculum revision process at Chittagong University, UPLB, IOF, and Kasetsart University.

- o **Guidance on Curriculum Content From Selected Topics of Current Interest in Forestry Curricula**--Some suggestions from professionals about the kinds of content that might be useful for forestry curricula. These include guidance on the information needs for field practitioners, linking technical and professional education, development of core competencies, and integrating gender concerns in forestry education.
- o **Development of a Module Integrating the Social Sciences in a Course on the Silviculture of Multipurpose Tree Species**--The summary of a workshop activity where participants discussed and outlined the elements of a process to develop a module and a range of potential topics that should be addressed in such a module for a course on the silviculture of multipurpose tree species.
- o **Curriculum Resource Inventory Instrument**--A survey instrument to identify existing resources in an academic institution that are available or needed for curriculum development.
- o **Selected References on Forestry Curriculum Development**--A list of useful references on curriculum development in general and forestry curricula specifically.

The volume is designed as a working document which can be modified through time--sections can be removed; new materials can be added. Please feel free to send additional materials that might be useful for colleagues to:

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**SECTION 1**

**RANGE OF POTENTIAL INNOVATIONS FOR  
FORESTRY CURRICULUM DEVELOPMENT IN  
ASIA**

by  
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Abstract. As part of the Social Sciences in Asian forestry curricula sub-project, participants provided many suggestions about potential innovations that are available to curriculum planners and implementors. This section outlines a range of potential innovations with details about how they might be made operational by individual institutions.

## Introduction

In recent years, many practitioners and academics in the forestry profession have taken stock of the ends and means of forestry education. One group stated that:

...[forestry] education has often been treated in many universities as a preparation for a vocation, and it has therefore sometimes concentrated on more practical aspects that could properly be considered training. In consequence it had tended to fit people to cope with problems of the past rather than recognizing, identifying and solving problems of the present, and even the future (FAO Advisory Group Committee on Forestry Education, 1981).

In June 1988, FAO brought a group of experts together to discuss these issues and to form a network of educators in the Asia region. Members of the group agreed that:

Broad-based curricula are required to ensure that forestry education is geared to serving in a holistic manner the protection, production, and social roles of forestry. Reorientation of forestry education towards a more integrated and holistic approach to forestry does not imply the abandonment of sound training in traditional forestry subjects (Forestry Educators Network, 1988).

Following these general guidelines, the designers and participants in a F/FRED-funded series of curriculum development exercises have had a number of tasks, including the need to identify and discuss a set of potential innovations to guide curriculum revision or development. Participants in the Khon Kaen Workshop initially identified the majority of innovations outlined below (Parker, et al. 1989). Reviewing literature, drawing on experience, and working with the participants of the Pokhara Workshop, the author of this document refined and instituted the potential innovations.

The potential innovations below cover a number of aspects of the implementation of curriculum development and reform and provide some useful points of departure for those activities. While many of the potential innovations focus particular attention on the integration of the social sciences in forestry curricula, many others are more applicable to technical forestry curriculum development. Many have been tried and had some degree of success in one or several institutions; others seem worthy of being implemented. Some innovations are reasonably suitable to a variety of situations and institutions; still others will continue to require more detail in order to be useful in a specific institutional context. Some might be high priority in one institution but low priority in another.

Whatever the case, it must be emphasized that these suggestions are intended to provoke thought about the range of possible actions that curriculum planners might take and serve as a "menu" from which to choose; they are not a complete and absolute set of guidelines for a specific institution to follow. Forestry curricula should be designed and implemented to meet the needs of the individual countries and sub-regions

which the institutions serve.

### Potential Innovations

The potential innovations fall into 8 general categories as listed below. More specific details on each category are provided in the subsections that follow.

1. Identification, planning and evaluation of curricula for professional education
  2. Faculty development
  3. Strengthening of existing curricula
  4. Research implementation strategies and research design issues to enhance forestry curricula
  5. Programs supporting improved curriculum development
  6. Networking to improve curriculum development
  7. Government policies and bureaucratic processes
  8. Funding of institutional development programs
1. Identification, Planning, and Evaluation of Curricula for Professional Education
- A. Programs of forestry education need to identify what current challenges confront forestry professionals in performing their planning, implementation, monitoring and evaluation responsibilities. Forestry educators then should try to match educational objectives and activities to those challenges. This might include developing a matrix that identifies field forestry problems, professional specializations, and the kinds of knowledge (e.g., technical, policy, legal, cultural), skills (e.g., thinking, analytic, creativity to confront changing reality), and attitudes (e.g., sensitivity to gender and ethnic differences) in which foresters should be trained. The basic question for this matrix is: Do we know what foresters are doing so that we can train them better? The matrix may be most suitable for identifying the needs for in-service training, but it might also serve a useful purpose for academic programs which often focus on discipline rather than problem oriented education.
- Universities should prepare, update, and re-evaluate the goals or mission statement of their forestry programs. They might develop statements such as: Faculty Mission Statement or a Mission Statement for Undergraduate Forestry Education that can guide development of their curricula.
- B. Analysis of Existing Courses
- o Universities might identify and analyze courses within existing curricula that would benefit from improved technical forestry or related inputs (e.g., in Forestry: "Introduction to Forestry", "Forest Resources Management", "Forest Policy", etc. and in Social Sciences: "Rural Development", "Applied

Social Science", etc.). This might involve:

- internal or external analysis which includes the collection of data from a variety of sources that describe existing curricular problems (Mugler, 1987);
  - development of guidelines/mission statements to make the analysis systematic and appropriate; and
  - encouragement of input from a variety of sources (including "employer surveys, exit interviews, employment projections, and program evaluations by faculty and students" (Mugler, 1987:14).
- o Some of the ingredients for a successful process of this sort include:
- a faculty which has a sense of ownership in the process and is willing, open, or otherwise motivated to modify existing curricula;
  - an institution prepared to support the changes that are identified by the evaluators; and
  - realistic recommended changes which can be made with existing or potential human, financial, and intellectual resources.

### C. Institutionalization of self-evaluation

- o Universities should institutionalize the internal/self-evaluation of existing curricula. This might include:
- developing a set of indicators for monitoring and evaluating changes (e.g., changes in the quality and topics of M.Sc. theses) to track changes in the adequacy and educational impact of the curriculum and the nature of the issues that are being addressed by the forestry education institution);
  - peer review of course materials, teaching techniques, etc.; and
  - evaluation of their own performance by recent alumni (e.g., are alumni qualified for the work they are doing, are there gaps in their knowledge that should be addressed in the educational program?).
- o In order to develop this kind of monitoring and evaluation system, it might be possible to obtain assistance from experts at similar institutions within the region who could be accessed through donor funding and identified through a

regional clearinghouse.

D. Clearinghouse on Curricula Development

- o The clearinghouse(s) (i.e., a center for collection, classification and distribution of information) would provide a range of services that translate new methods into academic respectability including:
  - Identifying, collecting, and reviewing "candidate illustrative or model curricula".
  - Disseminating information on a variety of institutional arrangements (e.g., development of a core interdisciplinary faculty in a single school vs. development of a variety of relationships with other educational departments and/or colleges and research centers) to meet the objectives of the educational program.
  - Identifying, describing, and analyzing experiences of other relevant professional fields (e.g., agriculture) which have developed potentially relevant or adaptable curricula or curriculum change processes.
  - Compiling a roster of individuals who can provide technical assistance, on request, to institutions developing or modifying forestry curricula.

2. Faculty Development

A. Range of Training Needs

- o Each institution might conduct a survey to identify training needs for individual faculty members and for faculty as a whole.
- o More efforts might be funded for training within countries to meet the specific needs of the nation.
- o This training might cover both substantive issues, research methods, and development of faculty teaching skills.
- o Training objectives might be met by:
  - Inviting experts from a teacher training institute to a workshop on forestry education.
  - Sending faculty to forestry teacher training programs (e.g., University of Philippines, Los Banos).

## B. Training to Improve Teaching Skills

- o Universities should organize and support teacher-training courses at selected regional or national institutions in the region.
- o Training should include:
  - developing skills to analyze and synthesize project and research reports for use in course lectures and presentations;
  - preparation of educational materials and learning about techniques such as: role playing, cooperative learning, games, and other interactive classroom teaching techniques which offer the possibility of increasing students' interpersonal skills without (or before) going on expensive field trips;
  - means to enhance the cognitive and other learning skills of students;
  - curriculum design; and
  - development of re-entry plans to help newly trained faculty identify the most appropriate opportunities for implementing the new skills and means for overcoming potential obstacles.

## C. Opportunities for Forestry Faculty Development

- o Universities might support the development of their forestry faculty by introducing among other opportunities:
  - team teaching by forester-social scientist teams in appropriate courses, seminars, lectures, etc. A caveat to this is that "students are exposed to a different language community in each discipline in which they take courses. This understanding of language may play a critical role in the success, or lack thereof, of team taught courses where broad perspectives are the goal..." (Mugler, 1987:14). Obviously, teachers themselves may have problems understanding the "language" of colleagues from other disciplines. Even where experts from other disciplines (e.g., social sciences) are used as resource persons for a course, this issue should be resolved.
  - joint applied multidisciplinary and interdisciplinary research;
  - project evaluations and consultancies or opportunities to work in government agencies for a period of time in

order to draw these experiences back into the education of their students; and

- seminars where those identified as excelling in teaching skills share ideas with their colleagues.

o Incentives for these activities might include:

- funding to develop or adapt new materials;
- new learning opportunities (e.g., forestry education traveling study tours to visit other institutions and discuss experiences with colleagues from other countries);
- publications and other materials that provide professors with access to information on new teaching theories, methods, etc.;
- best teacher awards which provide financial awards or prestige for achievement;
- sabbaticals for development of teaching skills; and
- administrative tolerance for failures at new or innovative activities.

D. Administration Support for Faculty Development

- o University administrators might work with each faculty member or a faculty committee to develop and implement a faculty development plan and with all faculty members to develop a more consistent approach to development of the faculty as a whole.

E. International Support for Faculty Development

- o Donors might work closely with national institutions to develop and implement faculty development programs.
- o Funding agencies might be made more aware of the need for appropriate support for collaborative research and publications by university scholars. Donors might fund in-service training for scholars in grantsmanship and proposal writing in order to enhance their ability to obtain support.

3. Strengthening Existing Curriculum

A. Range of Institutional Mechanisms to Strengthen Existing Curricula

- o Questions curriculum planners might want to ask are:
  - What is forestry supposed to do?

- How should we educate and/or train professionals to do forestry?
- How can we refocus our curricula around this new sense of purpose?
- What are the points of leverage to make the forestry profession more successful (Romm, 1988)?

One example of educational guidance for professionals to enhance their abilities is to assist them:

- "- to become partners in a dialogue with rural communities and also with rural development agents;
- to take active part in the essential integrated approach to problems of land use and rural development;
- to adapt themselves to, or bring about, the evolution of the requisite institutional structure; and
- to develop new attitudes, broaden their knowledge in the field of human science, communications, technology and agricultural science, and in rural economy" (FAO Advisory Committee on Forestry Education, 1978:5).

o Universities might analyze the administrative and organizational constraints and opportunities for the introduction and replication of innovative practices which integrate social science and forestry perspectives. Some examples of possible action include:

- Faculties might consider the possibility of dropping one or more traditional forestry courses and adding appropriate social science or other integrated theory and methods courses to take its/their place(s).
- Forestry education departments might retain the title of a more traditional course under existing university curriculum, but change the syllabus and course content to teach concepts and methods for addressing current challenges to forestry professionals.
- Forestry departments might introduce electives and majors of social forestry curricula where appropriate.



- o Universities might provide incentives and training for professors to teach social sciences in traditional forestry courses.
- o Networking within and among institutions might provide resources that are not currently in forestry programs. Opportunities include:
  - Universities might exchange professors to ensure that new ideas, materials, and methods are brought into the educational process.
  - Faculties (within and between institutions) might disseminate more publications, research results, examples of model curricula, etc. to enhance the content and organization of courses for mutual benefit.
  - Universities might encourage the sharing of information on curriculum development between departments through seminars, publication of newsletters, etc.
  - Universities in a country or region might discuss alternative ways to deal with shortages of faculty in specific fields and present a plan to donor agencies to help fill temporary gaps.
- o Linkages with action agencies and other groups might be enhanced through the following mechanisms:
  - Forestry faculties might hold seminars, workshops, etc., to increase awareness and to exchange knowledge and information on a range of topics, e.g., problems in village and farm forestry management. These seminars should include field practitioners, local people, and others.
  - Both university and implementing agencies might collaborate with rural organizations to carry out forestry research and extension work.
  - Universities might create a routine for linkages and contacts with government action agencies through activities such as field visits, workshops on curriculum development for agency personnel and faculty, etc.
  - Universities might work with action agencies to develop internship opportunities for students to provide for practical field experience, research opportunities, interaction and networking with professionals, etc.
- o Students/student organizations might be an important mechanism to strengthen overall curricular offerings to

enhance their professional education. They might be encouraged to organize seminars on special topics or they might request that special topics be covered, e.g., how to write reports that make a difference to decisionmakers.

**B. Ways to Strengthen Existing Course Content and Presentation**

- o Educational programs might identify a set of principles that most appropriately guide their development and constant evaluation of curriculum content. The following provide some examples (Phenix, 1964):
  - draw from "disciplined inquiry"—disciplined in the sense that the inquiry is rigorous and expert;
  - choose materials that are representative of the field as a whole;
  - emphasize methods of inquiry rather than mere acquisition of knowledge—"It is more important for the student to become skillful in the ways of knowing than to learn about any particular product of investigation. ...the modes of thought are far less transient than are the products of inquiry" (Phenix, 1964:11); and
  - arouse student imagination; tap deeper levels of experience.
- o Faculties might evaluate ways to enhance teaching and learning through its existing programs of:
  - Lectures
  - Case studies
  - Field practice
  - Discussion of competing paradigms of development by well-known Asian scholars.
- o Forestry faculties might examine existing courses, such as ecology, forest management, etc., to see whether opportunities exist for the integration of related kinds of knowledge (e.g., social sciences).
- o Faculties might teach about the contributions of social science theory and methods under the broad umbrella of forestry at all levels (B.S., M.Sc., Ph.D.) in the educational program of the institution.
- o Forestry faculties might introduce or improve "field-study" sites and activities (e.g., social laboratories, integrative practicums, etc.). This implies a re-orientation to small group approaches to field study.

- The lessons of successes and failures in field practice in forestry and related fields might be documented and synthesized in forms that are easily adapted to meet educational objectives.
  - Students might participate actively in the design, implementation, and analysis and reporting phases of these research activities.
  - Opportunities for shared learning among and between faculty and students might be emphasized.
  - Evaluation of the success or failure of this kind of learning activity might be conducted and documented to improve the contribution of this form of educational experience for future forestry professionals.
  - Faculty can ensure that future professionals have the appropriate mix of knowledge and skills (e.g., species identification, participatory planning, etc.).
- o Faculty members might evaluate field experiences and pose field problems directly to practicing social scientists, rural development specialists, and foresters and then incorporate these new learning opportunities into existing curricula. Organizers of these activities might use a debriefing technique to initiate the interactions.
  - o Faculty might work on government projects which involve scientists and practitioners from varied disciplines in project planning, implementation and action research and draw the lessons learned from these experiences into the educational process. These activities can also serve as training exercises for faculty.
  - o Forestry education departments might ensure that the knowledge from the best masters and doctoral theses feeds back into the curriculum development process for improved course content.

#### C. Ways to Improve the Quality of Courses

- o Universities and faculties might create or improve opportunities for alternative teaching/learning strategies such as contractual teaching/learning (i.e., having both professor and student sign an agreement that details course objectives, anticipated outputs, quality expectations, etc.), tutorial courses, etc.
- o Institutions might compile "how-to" manuals on specific topics (e.g., the integration of the social sciences in forestry research and practice) and situations that are

useful for students and field staff.

- o A mechanism might be developed that promotes the preparation of volumes of studies of selected cases from countries in the region, including translations if necessary, and provision of supporting Audio-Visual materials (e.g., videos) wherever feasible. Video-cameras and other media should be evaluated as learning/teaching instruments.

4. Research Implementation Strategies and Research Design Issues to Enhance Forestry Curricula

A. Development of Research Activities, Strategies and Programs in a University

- o An multidisciplinary faculty task force might identify collaborative research program opportunities. The task force should also identify modes for these research efforts which would most effectively serve as learning experiences for students.
- o The Task Force might develop guidelines on how to answer the following questions relative to future research opportunities: What priority topics require research? Where do important potential research sites exist (e.g., sites where a typical or unique problem exists, sites for comparative study, etc.)? When should the research effort occur (e.g., one point in time, during each major season of the year, longitudinally over many years)? By whom should the research be done (e.g., faculty, students, experts in specific fields, combinations)? How should the research be done (e.g., using what sampling techniques and data collection methods)? How much will the research cost, and where can funds be found to cover those costs?
- o The guidelines for development and implementation of a research program also should develop indicators for monitoring progress, mechanisms for peer review, potential publications to disseminate research results, and opportunities for integrating new knowledge into the existing educational program.
- o Forestry education and research efforts should encourage the creation of broader opportunities for students and faculty to study a wide range of socio-economic and agro-ecological situations and forest resource management regimes.
- o This might be achieved through:
  - modules in an introductory forestry course with student projects being focused on: agro-ecological situations, socio-economic situations, and forest resource

management regimes of the country;

- support of field trips to a variety of sites within a country with research and educational objectives (assistance for this kind of activity might come from the university, the donor community, the private sector, and/or foundations, etc.);
- promotion of more continuity in the research process by encouraging long-term studies, which incorporate a series of continuous but short-term research projects in which students can participate in building a mutually beneficial learning curve; and
- topics integrating research and education such as: studying communities to obtain their traditional knowledge, focusing on how local resource user groups are formed, what problems foresters have in working with them, and how to plan with and motivate these groups, etc.

**B. Criteria for Evaluating Research Proposals--Relevance to the Country and How to Integrate Proposals into the Learning Process**

- o Forestry faculties and funders should develop and apply criteria for evaluating proposed research activities, strategies, and programs that address national forestry problems.
- o These criteria might include how well the proposed research effort addresses the issues of productivity, stability, sustainability, and equitability as defined by G. Conway (Conway, 1986) in his work on agroecosystem analysis.
- o The proposals and the proposal review process might be included in courses, especially at the masters and doctorate levels to help orient future researchers in appropriate methods.
- o University forestry research programs should carefully use exploratory approaches (e.g., literature reviews, rapid rural appraisals, comparative case studies, and systematic interviews with field practitioners) as part of the student's education.
- o These would be geared to facilitate the identification of issues for further in-depth study, the development of generalizations, and the testing of hypotheses by faculty and students.
- o This process might serve as a focal point for teaching a course on research methods and research management at

national and regional institutions.

C. Communication of Research Results in the Educational Process

- o Forestry faculties should disseminate the results of such exploratory, innovative research widely to students, project managers and faculty.
- o Dissemination can come in the form of class lectures, seminar presentations, report writing, and peer reviewed publications.
- o Forestry faculties could find better and faster learning experiences to incorporate emerging concepts from both the forestry and social sciences in their teaching programs. This might include:
  - using field trips to share insights,
  - graduate student teaching assistantships, and
  - development of new textbooks and related teaching materials.
- o Institutional mechanisms for incorporating emerging concepts in teaching programs might include:
  - incentives for changing course content more frequently through access to updated information and teaching materials;
  - mini-sabbaticals for modification of course content to incorporate new knowledge;
  - performance awards (recognition and/or financial) that reward constant updating;
  - national or regional workshops to develop materials, draw together researchers, academics, curriculum development specialists and others, etc.;
  - networking with other institutions (e.g., academic and research);
  - developing multidisciplinary working groups;
  - supporting collaborative pilot projects.

**D. Exposure to Forestry and Social Science Research Methods and Skills**

- o Universities might promote exposure of foresters and social scientists to complementary research tools and skills. When they get to the field they may not be completely field ready, but they will be more ready for each other. Opportunities to encourage interactions such as these include:
  - participation in currently existing regional training courses at the University of the Philippines at Los Banos, through the A.I.D.-funded Forestry/Fuelwood Research and Development (F/FRED) Project;
  - development and dissemination of manuals geared to enhance research tools and skills of experts in other disciplines;
  - development of short-courses at a central institution in each country which bring together specialists from a range of disciplines, and from a variety of educational and research institutions; and
  - requirement of long-term graduate education of foresters being in institutions which can provide this kind of exposure.
- o Academic institutions might also encourage and support field foresters who excel in social forestry to teach social science skills.

**5. Programs Supporting Improved Curriculum Development**

**A. Information Sharing/Exchange**

- o Action agencies that implement programs and projects might send project reports to the libraries of relevant forestry training institutions on a more routine basis.
- o Universities might improve the collection, exchange, dissemination, review, and synthesis of relevant educational materials, including high quality M.Sc. and Ph.D. theses across the region and globally through an interlibrary loan network.
- o Universities might encourage the development of forestry library facilities.
  - Libraries need to develop as other project elements develop.
  - Libraries might develop a system that lets faculty

- members know of new acquisitions.
- Libraries might work more with faculty members or a committee to identify new acquisitions.
  - Universities might encourage and support the training of librarians in forestry information management and potential sources of new information.
  - Universities might develop a mechanism for sharing books with other libraries within their respective countries.
  - Universities might support libraries in the translation of important scientific articles and abstracts into local languages for broader distribution.
  - Universities might seek funds to ensure that journals published at national institutions are exchanged within the region.
  - Forestry departments might encourage librarians to sit in on all seminars in order to keep them abreast of new issues in the forestry field.
- o Universities might provide incentives for faculty to publish teaching texts and jointly authored articles in professional journals as well as to perform public service and extension work.
  - o Universities might identify and tap sources of support for publications and the dissemination of reports more broadly.
  - o Mechanisms to enhance these information sharing activities might include:
    - A clearinghouse for collection, classification, and dissemination of information.
    - Twinning of universities and research institutions that would share publications.
    - Providing support to existing information producing and disseminating organizations (e.g., ODI's Social Forestry and other networks).
    - Developing a newsletter (or newsletters) in several languages that provide brief summaries based on reviews of new materials and provide up-to-date information on state-of-the-art technologies, research results, etc.
    - For post-graduate education: "(i) strengthen one institution in the region or a centre for post-graduate



forestry education and research, (ii) establish one such centre for each country, or (iii) form a consortium of leading forestry institutions that could pool their facilities, staff and resources to promote education and research at the post-graduate level" (del Castillo, 1980:3).

**B. Faculty Support (also refer to section above on Faculty Development)**

- o Universities might seek funds to support a variety of mechanisms to enhance the knowledge base of faculty. These include:
  - networks,
  - travel funds (lack of which are a major obstacle to encouraging and ensuring faculty development),
  - translation of excerpts of important scientific works,
  - seminars in educational planning, improved teaching skills, etc.,
  - workshops,
  - publications--while a major career incentive is promotion, faculty members often find it very difficult to find publishers and the cost of publishing is very high as forestry disciplines comprise a relatively small market for books. This constraint to increasing the number of quality publications in the Asia region needs to be addressed.

**C. Support of Professionals**

- o The public and private sector might be encouraged to provide wider job opportunities to students who complete the requirements of this newly integrated curriculum.
- o Universities might serve as training centers for the continuing education of field practitioners. While the objective of the continuing educational program is for professionals who have been in the field for a number of years, this should be looked at as an opportunity to ensure that technicians, undergraduate and graduate students also have opportunities to interact with practitioners who are participating in continuing education programs. The opportunities for this include:
  - Joint field trips that include field practitioners and those studying for certificate, B.S., and higher

degrees.

- Seminars given by students to the professionals and by professionals to the students, etc.

#### D. Support of Students

- o Universities might seek funding for students to do research to cover transportation, per diem, equipment, and associated expenses.
- o Universities might seek donor funds to publish some student projects in order to help improve the standards of student professional abilities.
- o Universities might use the experience of Bogor where the university and an inter-university organization of students have published a journal on social forestry and other topics.
- o Universities might encourage other information dissemination activities such as using a bulletin board as a publication forum where students can share their works with other students and faculty at low cost.
- o Universities might seek funds for an international student publication that students in the region would be able to contribute to.

### 6. Networking to Improve Curriculum Development

#### A. Networking Opportunities

- o Universities might develop a network among those teaching social sciences in forestry and exchange information between individuals, institutions, and countries.
- o Universities in the regions might explore with existing and emerging research and educational networks, the possibilities and mechanisms of inter-institutional action programs.
  - Universities might identify opportunities for the flow of information from research networks into the networks of educators, through joint conferences or seminars, etc.
  - Universities, through the mechanism of a Memorandum of Understanding (MOU), might work with research networks (e.g., Multipurpose Tree Species) to develop curricular materials that can be disseminated from the research network to educators and students.

- o Universities might identify opportunities and find support for the exchange of faculty/staff within and between countries.
- o Forestry education departments might support and participate in the establishment of professional associations and informal networks of scientists from various disciplines in their countries.

## 7. Government Policies and Bureaucratic Processes

### A. Government Policies

- o Government policies might be modified to provide incentives (e.g., funds, support) for universities to include new courses and concepts.
- o Government agencies might authorize and support new career paths that encourage the recruitment of students trained in new specializations.
- o Government agencies might encourage mid-career redevelopment for field practitioners, program planners, administrators, and decisionmakers and provide the necessary funds.

### B. Bureaucratic Processes that Help or Hinder Forestry Curriculum Development

- o Universities might strive to modernize their traditional, time-consuming bureaucratic processes in curriculum development. This would have an impact on all programs, not just forestry.
- o Academic institutions might re-evaluate the objectives and incentive structures for career advancement. In some cases, meeting teaching responsibilities might be seen to be equally as important as achieving tenure for research and publishing accomplishments.
- o Universities and government agencies might insist that outside consultants work more closely with faculty in the development of curriculum. Faculty, who are a major source of expertise, often are not consulted when institutional development projects are designed and funded by international donor agencies.
- o One bureaucratic process that is not always modified even though efforts at curriculum reform are undertaken is that of examinations.
  - Even if course content is changed, national level examination systems forestry may not. Universities

might want to insist that the gap between curriculum and the examination system match so that students are examined on relevant content.

- Universities might want to be particularly aware of the ramification of instituting new curriculum for students who are already in the process of pursuing the previous curriculum. Examinations for the two might be different and should be accounted for.

## 8. Funding of Institutional Development Programs

### A. Actions for National-Level Academic Institutions

- o Universities across the region might survey sources of catalytic funding for curriculum development activities.
- o Funding for joint research projects and programs between universities and implementation agencies might be strongly promoted and strengthened in national forestry sector planning exercises.
- o Governments and donors might provide continuous funding and other forms of support for curriculum development. Universities need to find mechanisms to obtain and maintain a list of donors inside and outside of each country who can be of help in providing funds for development of more integrated curriculum.
- o Universities might the possibility of comparing courses and programs of study across the region to be better able to assess the qualifications of students who study in other institutions (e.g., Nepali students who have studied at Dehra Dun in India).
- o In order to guide potential donors and avoid duplication of funds and effort, universities should develop plans that define their needs and identify existing resources, and previous history of institutional development.

### B. Actions for Donor Community

- o Catalytic funding from the donor community might be tapped by lead forestry faculties or by new social forestry organizations to access and disseminate existing and new knowledge. The purposes of such an effort would be to:
  - Provide quicker and easier access to this knowledge at the country and regional level,
  - Organize periodic workshops, seminars, and meetings for members to learn from each other while fostering peer

review to enhance the quality of such learning experiences, and

- Update a roster of experts, scholars, and field practitioners to make it easier to tap the experiences of those in the region who are working on the integration of social sciences and forestry.
- o The Donor community might provide continued funding for university development, collaborative research, professional development, student activities and other special projects and programs (e.g., National Grants Programs for institutions to develop and institutionalize courses, course modules, etc. into their curricula; the intent would be for the institutions to maintain these learning opportunities once the grant program had ended).
- o The Donor community might identify and fund several institutions in the region for a 5 to 10 year period to strengthen their curricula and faculty in certain fields. These institutions would implement dissemination and training programs (e.g., through consultant services, faculty and administrator workshops, evaluations, and conferences) to work with other institutions across their regions.
- o The Donor community might want to look at mechanisms to shorten the process of project design in order to initiate institutional development activities in a more timely fashion.

### Conclusion

It is important to re-emphasize that these suggestions are illustrative rather than comprehensive. While guidelines for implementing many of suggestions have been included, many need greater detail to be useful to specific institutions; others, however, merely need adaptation to fit the context in which they are to be applied. The eight categories of potential innovations cover the major areas of concern for curriculum planners. They focus on issues of the curriculum planning and evaluation process, opportunities and constraints to faculty development, processes and mechanisms for strengthening existing curricula, opportunities to enhance the linkages of research and education, associated programs that need to be supported to enhance curricular development, networking opportunities that should be identified and supported, government policies and bureaucratic processes that help or hinder curriculum development, and guidelines for funding of institutional development programs. Hopefully, a "menu" such as this can serve as an important beginning for forestry curriculum planners and educators across the Asia region.

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**SECTION 2**  
**AN APPROACH TO ANALYZING ASIAN FORESTRY  
PROGRAMS AND CURRICULA**

**NOTE:** The purpose of this section is to familiarize the reader, through use of examples, with Asian forestry education programs. The first example (Subsection A) is a tool that can be used to analyze the printed literature which describes a university's education program and curriculum. It is a modification of Ryan's 1986 book on teaching comparative-development. This general outline is utilized throughout the remaining discussion in this section. The subsequent examples (Subsections B and C) show the application of the analysis to actual curricula in: the College of Forestry, The University of The Philippines at Los Banos; and the Institute of Forestry/Institute of Renewable Natural Resources at Tribhuvan University, Nepal

The analyses are taken from printed literature about each university's forestry program, and should be viewed with prudence because actual changes within a school's program happen more quickly than changes in the printed material about a school's program. Hence, some items in the analyses may be out of date, illustrating a possible shortcoming in this analysis technique. The tables in the middle of subsection B (referred to in I.4.B.a of the analysis in subsection B) list the curriculum requirements for the College of Forestry's Bachelor of Science degree programs. The tables at the end of subsection C (referred to in I.4.B. of the analysis in subsection C) list the existing curricula for the Institute of Forestry/Institute of Renewable Natural Resources' Certificate and Bachelor of Science degree programs, and proposed revisions to these curricula.

## Subsection A

### GENERAL OUTLINE OF A CURRICULUM CONTENT ANALYSIS

Source: Ryan, Richard W. 1986. Teaching Comparative-Development Administration at U.S. Universities: A Collection and Analysis of Syllabi. Kumarian Press, West Hartford, CT.

#### I. Program description.

1. Name & address of university/institution.
2. Name of department/dean.
3. Objectives of department.
4. Degrees offered (BSc, MSc, PhD).
  - A. Objectives of each degree.
  - B. List of courses to fulfill each degree (show by year if available, highlight those with social science emphasis, NB: All course descriptions should be reviewed to see if they include social components).
  - C. List any social science courses in other departments (e.g., Rural Sociology, Human Ecology, Ag. Econ., Ag. Extension, Horticulture, Anthropology, etc.) that students may take as electives.
  - D. Examine germane social science departments (e.g., human ecology) for forestry and biology requirements.

II. Facilities available to students in support of their studies (e.g., school forest, computer lab, library [inc. size and type of holdings], etc.), especially those that support social studies.

#### III. Rules and regulations.

1. Admissions
  - A. Undergraduate
    - a. Domestic
    - b. Foreign
  - B. Graduate
    - a. Domestic
    - b. Foreign
  - C. Transfers
  - D. Scholarships/fellowships



- E. Leaves of Absence
  - F. Grading
    - a. University graduation standards
    - b. Department/degree graduation standards.
  - G. Tuition and fees (NB: coded range of credit tuition and fees should be devised based on quick review of several catalogs).
    - a. Undergraduate
      - i. Domestic
      - ii. Foreign
    - b. Graduate
      - i. Domestic
      - ii. Foreign
  - H. Personal expenses (NB: coded range for each subheading should be devised based on quick review of several catalogs).
    - a. Lodging
    - b. Board
    - c. Textbooks
    - d. Incidental expenses
  - I. Support services (e.g., health, counseling, career placement)
- IV. Course descriptions (w/ social science emphasis, see 1.D.b. & c.).
- 1. Course title
  - 2. Objectives
  - 3. Topics
  - 4. Reading list
  - 5. Assignments, evaluation, and grading system.
- V. Analyze the information gathered in 1., 2., and 4. for a number of institutions to determine the range and variation of social science integration in forestry curricula, and to highlight innovative approaches to integration/course content that might be generalized across the region.
- VI. Sources used.

**Subsection B**

**University of the Philippines**

**I. Program description.**

**1. Name & address of university/institution.**

**University of the Philippines  
Los Banos  
Laguna, Philippines**

**2. Name of department/dean.**

**College of Forestry  
Dean Celso B. Lantican**

**3. Objectives of department.**

- a) to train men in proper administration and wise utilization of country's vast forest resources and in reclamation/reforestation of grass and barren, non-agricultural lands.**
- b) to provide high standard of forestry education in the Orient and to serve as a central agency for knowledge and information concerning forestry.**
- c) to provide trained men for the increasing demand from the forest industries.**

**4. Degrees offered.**

**Undergraduate:**

**B.S. Forestry  
B.S. Forest Products;  
Ranger Certificate (nondegree)**

**Graduate:**

<b>M.F. Forestry</b>	<b>M.S. Forestry</b>
<b>M.F. Wildlife Studies</b>	<b>M.S. Wildlife Studies</b>
<b>M.F. Genetics</b>	<b>M.S. Genetics</b>
<b>M.F. Plant Breeding</b>	<b>M.S. Plant Breeding</b>

**PhD. Forestry  
PhD. Microbiology  
PhD. Plant Breeding**

**A. Objectives of each degree.**

**Undergraduate:**

**B.S. Forestry: to**

- 1) provide strong background in efficient, ecological and sustained forest development.
- 2) develop adequate sensitivity and understanding of relationship of man and the forest resources.
- 3) have working knowledge of that relationship.

**B.S. Forest Products Engineering: to**

- 1) provide foundation of the basic sciences, largely mathematics, engineering, physics and chemistry.
- 2) equip men with necessary theoretical and practical knowledge for competent technical and production management work in logging operations and wood processing complexes.

**Certificate: Forest Ranger (non-degree) to:**

- 1) meet quality manpower requirements in forestry at technician's level, for career in reforestation, inventory, engineering and logging, and other aspects of forest administration and management.

**Graduate:**

**General: to**

- 1) develop ability of students to undertake critical inquiry and independent research.
- 2) develop professional leadership.
- 3) encourage independent work and research.

**M.S. in all Forestry programs: to:**

- 1) provide a comprehensive view of some of the major fields of interest.
- 2) develop the student's ability in conducting independent research in chosen field and related areas of knowledge.

**Doctor of Philosophy in all forestry programs: to**

- 1) provide training beyond master's level for students who wish to develop a more adequate comprehension of the basic and advanced concepts of forest biology, silviculture and forest influences, forest resource management, and forest product utilization.
- 2) prepares students to be competent researchers and assume responsible positions in education, industry and government service.

**B. List of courses to fulfill each degree, by year.**

There are five academic departments within the college of forestry; these departments offer both undergraduate and graduate courses:

1. Forest Biological Sciences
2. Silviculture and Forest Influences
3. Forest Resources Management
4. Wood Science and Technology
5. Social Forestry

**a) Undergraduate:**

See Tables 1-5

**b) Graduate:**

Course requirements vary according to program.

**General:**

**M.S. Forestry:**

Minimum 24 units coursework, of which 18 units should be above 200 level; 15 units must be in major field, and 9 units must be in minor field. General examinations must then be passed. Thesis work is required, and a final examination is given upon completion of thesis.

**Master of Forestry:**

No thesis is required. Minimum of 30 units of coursework, with at least 24 units above 200 level. Eighteen to 21 units must be in major field, and 9-12 units in minor field.

**PhD.:**

Minimum of 24 units of coursework beyond the master's level, with at least 18 units above 200 level. At least 12 units must be in major field, and 6 units in each cognate field. There may be a foreign language requirement. A qualifying examination is given no later than eight weeks after the start of the second semester of residence. Candidate must pass comprehensive examinations, present a satisfactory dissertation, and pass a final examination based upon the dissertation.

Table 1

	<u>Social Science Emphasis</u>	<u>Social Science Component</u>	<u>Other</u>	<u>Elective Option</u>
<u>B.S. Forestry</u>				
<u>First Year/First Semester:</u>				
BOT 1: Intr. Plant Science			X	
COMM 1: Comm. Skills		X		
FOR 1: Gen. Forestry		X		
MATH 11: College Algebra			X	
SOSC 1: Found. of Beh. Science	X			
ZOO 1: General Zoology			X	
FBM 90: Technical Drawing			X	
CMT 11: Military Training			X	
<u>P.E. 1</u>			X	
<u>TOTALS:</u>	1	2	6	0
RELATIVE % (# CLASSES/SEMESTER):	11.1%	22.2%	66.6%	-
<u>First Year/Second Semester:</u>				
COMM 11: Comm. Skills		X		
FBS 4: Tree Morph. & Taxonomy			X	
MATH 14: Plane Trig.			X	
PHYS 1: Intro. Physics			X	
SF 101: Princ/Conc. of Soc. Forestry	X			
CHEM 15: Fund. of Chemistry			X	
CMT 12: Military Training			X	
<u>P.E. 2/3</u>			X	
<u>TOTALS:</u>	1	1	6	0
RELATIVE % (# CLASSES/SEMESTER):	12.5%	12.5%	75%	-

	<u>Social Science Emphasis</u>	<u>Social Science Component</u>	<u>Other</u>	<u>Elective Option</u>
<u>B.S. Forestry</u>				
<u>Second Year/First Semester</u>				
HUM 1: Liter., Man and Society	X			
HIST 1: Philippine History	X			
FBS 24: Dendrology			X	
MATH 26: Analyt. Geom/Calc. I			X	
FBS 31: Plant Physiology			X	
SF 11: Forest Conservation	X			
CMT 21: Mil. Training			X	
<u>P.E. 2/3</u>			X	
<u>TOTALS:</u>	3	0	5	0
RELATIVE % (# CLASSES/SEMESTER):	37.5%	-	62.5%	-
<u>Second Year/Second Semester</u>				
SOSC 11: General Economics	X			
FBS 36: Fund. of Forest Ecol.		X		
HIST 11: Asia & the World	X			
WST 11: Wood Struct & Ident.			X	
WLDL 101: Intro. Philip. Wildlife			X	
SFI 100: Geol. & Forest Soils			X	
CMT 22: Mil. Training			X	
<u>P.E. 2/3</u>			X	
<u>TOTALS:</u>	2	1	5	0
RELATIVE % (# CLASSES/SEMESTER):	25%	12.5%	62.5%	-

Table 2

	<u>Social Science Emphasis</u>	<u>Social Science Component</u>	<u>Other</u>	<u>Elective Option</u>
<u>B.S. Forestry</u>				
<u>Third Year/First Semester:</u>				
EMC 10: Writ. Scient. Papers			X	
FBS 26: Intr. to Forest Entom.			X	
FRM 91: Forest Surveying			X	
SFI 120: Silviculture 1			X	
STATS 1: Elem. Stats.			X	
COMM III: Speech Comm.		X		
TOTALS:	0	1	5	0
RELATIVE % (# CLASSES/SEMESTER):	-	16.6%	83.3%	-
<u>Third Year/Second Semester:</u>				
FRM 61: Forest Biometry			X	
FRM 117: Forest Economics		X		
SFI 121: Silviculture 2			X	
STS: Science, Techn. and Society	X			
P.I. 100: Life and Works of Rinal	X			
Elective				X
TOTALS:	2	1	2	1
RELATIVE % (# CLASSES/SEMESTER):	33.33%	16.66%	33.33%	16.66%

	<u>Social Science Emphasis</u>	<u>Social Science Component</u>	<u>Other</u>	<u>Elective Option</u>
<u>B.S. Forestry</u>				
<u>Fourth Year/First Semester:</u>				
FRM 186: Timber Mgmt. 1		X		
FRM 192: Timber Harvesting			X	
SOCG II: Soc/Econ/Polit. Thought	X			
PHLO I: Philoa. Analysis	X			
WST 127: Wood Prop. & Util.			X	
Elective				X
TOTALS:	2	1	2	1
RELATIVE % (# CLASSES/SEMESTER):	33.33%	16.66%	33.33%	16.66%
<u>Fourth Year/Second Semester:</u>				
FRM 124: For. Policy & Admin.	X			
FBS 41: Forest Pathology			X	
FRM 187: Forest Mgmt. 2		X		
KUM II: Art. Man & Society	X			
SF 152: Sociology of Nat. Res.	X			
Elective:				X
TOTALS:	3	1	1	1
RELATIVE % (# CLASSES/SEMESTER):	50%	16.66%	16.66%	16.66%

Table 3

	<u>Social Science Emphasis</u>	<u>Social Science Component</u>	<u>Other</u>	<u>Elective Option</u>
<b><u>B.S. Forest Products Engineering:</u></b>				
<b><u>First Year/First Semester:</u></b>				
BOT 1: Intro. to Plant Science			X	
ENG I: Communication Skills		X		
MATH 1: College Algebra			X	
SOSC I: Intro. to Behav. Science	X			
SPAN 1: Elem. Spanish		X		
WST 91: Forest Prod. Industries			X	
ZOO 1: General Zoology			X	
CMT 11: Mil. Training			X	
<b>TOTALS:</b>	<b>1</b>	<b>2</b>	<b>5</b>	<b>0</b>
<b>RELATIVE % (# CLASSES/SEMESTER):</b>	<b>12.5%</b>	<b>25%</b>	<b>62.5%</b>	<b>-</b>
<b><u>First Year/Second Semester:</u></b>				
CHEM 15: Fund. of Chemistry:			X	
ENG II: Comm. Skills		X		
MATH 2: Plane Trigonometry			X	
SOSC II: Princ. of Govt. & Politics	X			
FBS 23: Ident. of Comm. Trees			X	
SPAN II: Elem. Spanish		X		
CMT 12: Mil. Training			X	
<b>TOTALS:</b>	<b>1</b>	<b>2</b>	<b>5</b>	<b>0</b>
<b>RELATIVE % (# CLASSES/SEMESTER):</b>	<b>12.5%</b>	<b>25%</b>	<b>62.5%</b>	<b>-</b>
<b><u>B.S. Forest Products Engineering:</u></b>				
<b><u>Second Year/First Semester:</u></b>				
ENSC 10: Engineering Graphics			X	
CHEM 40: Basic Organic Chemistry			X	
MATH 26: Analy. Geom./ Calc. I			X	
PHYS 3: General Physics			X	
SPAN 12: Intern. Spanish			X	
WST 11: Wood Struct. & Ident.			X	
CMT 21: Mil. Training			X	
<b>TOTALS:</b>	<b>0</b>	<b>0</b>	<b>8</b>	<b>0</b>
<b>RELATIVE % (# CLASSES/SEMESTER):</b>	<b>-</b>	<b>-</b>	<b>100%</b>	<b>-</b>
<b><u>Second Year/ Second Semester:</u></b>				
FRM 2: Elements of Forest Prod.			X	
ENG III: Intro. to Literature	X			
MATH 27: Analy. Geom./ Calc. II			X	
PHYS 13: General Physics			X	
SPAN 13: Intern. Spanish		X		
WST 141: Lumber Mfg. & Grading			X	
CMT 22: Mil. Training			X	
<b>TOTALS:</b>	<b>1</b>	<b>1</b>	<b>6</b>	<b>0</b>
<b>RELATIVE % (# CLASSES/SEMESTER):</b>	<b>12.5%</b>	<b>12.5%</b>	<b>75%</b>	<b>-</b>
<b><u>Second Year/Summer Practicum</u></b>				
WST 150: Forest Industries Practicum			X	
<b>TOTALS:</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>0</b>
<b>RELATIVE % (# CLASSES/SEMESTER):</b>	<b>-</b>	<b>-</b>	<b>100%</b>	<b>-</b>

Table 4

	<u>Social Science Emphasis</u>	<u>Social Science Component</u>	<u>Other</u>	<u>Elective Option</u>
<u>B.S. Forest Products Engineering:</u>				
<u>Third Year/First Semester:</u>				
ENSC 11: Statics of Rigid Bodies			X	
FRM 92: Forest Engineering			X	
MATH 28: Analy. Geom./Calc. III			X	
SOSC III: General Economics	X			
SPCM 1: Funda. of Speech		X		
WST 121: Wood Physics I			X	
WST 131: Wood Chemistry			X	
<u>TOTALS:</u>	<u>1</u>	<u>1</u>	<u>5</u>	<u>0</u>
RELATIVE % (# CLASSES/SEMESTER):	14.2%	14.2%	71.4%	-
<u>Third Year/Second Semester:</u>				
ENSC 12: Dyn. of Rigid Bodies in Motion			X	
ENSC 14: Basic Thermodynamics			X	
HUM I: Introd. to Humanities	X			
FRM 192: Timber Harvesting			X	
WST 151: Wood Seasoning			X	
WST 161: Wood Preservation			X	
WST 172: Glued Wood Prod. Techn.			X	
<u>TOTALS:</u>	<u>1</u>	<u>0</u>	<u>6</u>	<u>0</u>
RELATIVE % (# CLASSES/SEMESTER):	14.2%	-	85.8%	-

	<u>Social Science Emphasis</u>	<u>Social Science Component</u>	<u>Other</u>	<u>Elective Option</u>
<u>B.S. Forest Products Engineering:</u>				
<u>Fourth Year/First Semester:</u>				
ENSC 15: Funda. of Heat Transfer			X	
ENG 10: Writing Scient. Papers			X	
PI 100: Life and Works of Rizal	X			
SOSC IV: Social & Polit. Thought	X			
STAT 1: Elementary Statistics		X		
WST 190: Research Problem			X	
<u>Elective</u>				<u>X</u>
<u>TOTALS:</u>	<u>2</u>	<u>1</u>	<u>3</u>	<u>1</u>
RELATIVE % (# CLASSES/SEMESTER):	28.5%	14.2%	42.85%	14.2%
<u>Fourth Year/Second Semester:</u>				
ENSC 16: Fluid Mechanics			X	
ENSC 19: Basic Elect. Engineering			X	
WST 124: Timber Mechanics			X	
WST 182: Product. Planning & Control			X	
WST 183: Engineering Econ. Anals.		X		
WST 199: Seminar in Wood Science/Techn.			X	
<u>TOTALS:</u>	<u>0</u>	<u>1</u>	<u>5</u>	<u>0</u>
RELATIVE % (# CLASSES/SEMESTER):	-	16.66%	83.33%	-



Table 5

	<u>Social Science Emphasis</u>	<u>Social Science Component</u>	<u>Other</u>	<u>Elective Option</u>
<u>Forest Ranger Certificate:</u>				
<u>First Year/First Semester:</u>				
FBS 1: Forest Botany			X	
FR 9: Forest Zoology			X	
FRM 60: Elem. Forest Mgmt.			X	
FRM 90: Technical Drawing			X	
ENG A: Fund. of Eng. I		X		
SOSC A: Personality & Soc. Develpmt.	X			
GMT 11: Mil. Training			X	
<u>P.E. 1</u>			X	
TOTALS:	1	1	6	0
RELATIVE % (# CLASSES/SEMESTER):	12.5%	12.5%	75%	-
<u>First Year/Second Semester:</u>				
FR 12: Forest Seed Plants			X	
FR 16: Elem. Forest Economics		X		
FR 20: Elem. Forest Surveying			X	
SFI 21: Forest Nurseries			X	
ENG B: Fund. of English II		X		
GMT 12: Mil. Training			X	
<u>P.E. 2/3</u>			X	
TOTALS:	0	2	5	0
RELATIVE % (# CLASSES/SEMESTER):	-	28.57%	71.42%	-
<u>First Year/Summer Session:</u>				
FRM 65: Forest Mensuration & Invent.			X	
TOTALS:			1	
RELATIVE % (# CLASSES/SEMESTER):			100%	

	<u>Social Science Emphasis</u>	<u>Social Science Component</u>	<u>Other</u>	<u>Elective Option</u>
<u>Forest Ranger Certificate:</u>				
<u>Second Year/First Semester:</u>				
FR 31: Elem. Forest Protection			X	
FRM 128: Forest Laws & Regul.	X			
SFI 20: Elem. Silviculture			X	
WST 11: Wood Struct. & Ident.			X	
WST 92: Forest Products			X	
GMT 21: Mil. Training			X	
<u>P.E. 2/3</u>			X	
TOTALS:	1	0	6	0
RELATIVE % (# CLASSES/SEMESTER):	14.28%	-	85.7%	0
<u>Second Year/Second Semester:</u>				
FR 38: Forest Administration	X			
FR 42: Logging Engineering			X	
FRM 100: Intro. to For. Res. Mgmt.		X		
SF 111: Forest Conservation		X		
SWT 141: Lumber Mfg. & Grading			X	
SOSC 100: Social Organization	X			
GMT 22: Mil. Training			X	
<u>P.E. 2/3</u>			X	
TOTALS:	2	2	4	0
RELATIVE % (# CLASSES/SEMESTER):	25%	25%	50%	-

C. Social science courses in other colleges and departments that students may take as electives.

**1. College of Agriculture:**

Dept. of Agricultural Education and Rural Studies:  
Educational Psychology; Methods of Agricultural Extension; Theories and Principles of Education; Principles and Methods of Teaching; Community Survey and Program Planning; Organization and Administration of Education Programs; Group Dynamics; Rural Government; Community Organization; Rural Sociology; Extension Teaching and Communication; Agricultural Administration.

Dept. of Development Communication:  
Introd. to Development Communication;  
Fundamentals of Development Journalism;  
Community Broadcasting; Communication and Society.

**2. College of Arts & Sciences:**

Dept. of Humanities:  
Language and Communication; Psychology of Language; Language & Culture; Readings in Speculative Thought; Mythology & Folklore; Social Anthropology; Modern Imperialism & Nationalism; Politics of Development; Contemporary Ideologies; General Psychology; Current Issues in Philippine Social and Political Thought; General Sociology; Social Stratification; Sociology of the Family; Sociology of Political Development; Sociology of Religion; Urban Sociology; Social Psychology; Introd. Demography; Sociological Theories; Social Change; Collective Behavior; Social and Political Thought; Science and Society.

**3. College of Development Economics & Management:**

Dept. of Agricultural Economics:  
Cooperatives; Land Economics.

Dept. of Economics:  
Interm. Macroeconomics; Interm. Microeconomics; Consumption Economics; History of Economic Doctrines; Philippine Economic History; Comparative Economic Systems; International Economics; Introd. to Natural Resource Economics; Human Resource Economics; Development Economics; Agrarian Reform and Systems; Economics of Agrarian Reform; Legislation and Administration of Agrarian Reform Programs; Social Dynamics in Agrarian Reform; Special Problems; Theory & Comparative Development of Cooperatives;

**Cooperatives Legislation.**

**4. College of Forestry:**

**Dept. of Silviculture and Forest Influences:  
Fundamentals of Agroforestry.**

**Dept. of Social Forestry:**

**Communication Process; Transfer & Utilization of  
Forestry Technology; Program Planning; Forestry  
Extension; Socio-Economics of Agroforestry;  
Evaluation Methods in Social Forestry;  
Anthropological Concepts for Social Forestry;  
Research Problems; Seminar in Social Forestry.**

**Graduate Courses:**

**Forest Policy Formulation; Advanced Forest  
Management; Economic Analysis in Forest  
Management; Multiple-Use Forestry; Comparative  
Social Forestry; Program Development & Evaluation  
in Social Forestry; Agroforestry Management  
Practice; Cultures & Societies in Tropical Forest  
Ecosystems; Swidden Farming Systems; Special  
Problems in Social Forestry; Graduate Seminar in  
Social Forestry;**

**5. College of Human Ecology:**

**General:**

**Man and his Environment; Human Ecological  
Perspective in Development; Ecology and Value  
Systems; Social Policies; Special Problems;  
Field Experiences; Research Methods in Human  
Ecology; Seminar in Human Ecology; Fundamentals of  
Human Settlements; Material and Energy Flows.**

**Graduate Courses:**

**Special Problems; Special Topics; Graduate  
Seminar in Human Ecology.**

**D. Forestry and biology requirements in germane social  
science programs.**

**a) College of Arts and Sciences:**

**B.A. in Communication Arts: One full year of  
General Biology, or Zoology, or Plant Science.**

**B.A. in Comm. Arts with Education Option: same  
as above.**

**B.A. in Sociology: One full year of General  
Biology, or Zoology, or Plant Science. One  
semester of Principles of Ecology.**

**b) College of Development Economics and Management:**

B.S. in Agricultural Economics: One semester of Plant Science. One semester of General Zoology. One semester of Soil Science.

B.S. in Agricultural Business: same as above.

B.S. in Economics: One full year of General Biology or Plant Science.

**c) College of Engineering and Agro-Industrial Technology:**

B.S. in Agricultural Engineering: One full year of General Biology.

B.S. in Sugar Technology: same as above.

**d) College of Human Ecology:**

B.S. in Human Ecology: One full year of General Biology. One semester of General Ecology.

B.S. in Nutrition: One full year of General Biology. One semester of General Microbiology. One semester of General Biochemistry.

**II. Facilities available to students as support for their studies:**

**A. Computer Facilities:**

**1) Services:**

Computer Science Library (CSL) is an extension & research arm of the Institute of Mathematics, Sciences and Physics. Extension services for all students are in the form of consultation, training programs in keypunch systems operation as well as computer systems such as BASIC, FORTRAN, COBOL, PL/I, SAS, SPSS and MPSX.

**2) Equipment:**

Six IBM auxiliary machines consisting of four 029 Printing Card Punchers for data processing; two 059 Card Verifiers; one 082 Card Sorter; one interactive terminal hooked-up with the IBM 370 at the Agricultural Resource Center (ARC).

**B. Library Holdings, Facilities and Services:**

Totals: 139,053 books and bound periodicals;  
12,553 theses and dissertations;  
3,738 maps, microforms and phonodisks;  
2,668 serials received annually.

**Relevant Libraries:**

- 1) Main Library: 108,149 volumes; 600 periodicals; seats 600; microfiche reader/printer; microfilm reader/printer; copying machine; carrels for graduate students, faculty and researchers; depository for publications of FAO and World Bank; national center for International Information System for the Agricultural Sciences and Technology (AGRIS). Uses Library of Congress classification; has catalog of all University library system holdings.
- 2) College of Forestry Library: 24,146 volumes.
- 3) College of Development, Economics and Management- Agricultural Credit and Cooperatives Institute Library: 4,074 volumes.
- 4) Agrarian Reform Institute Library: 9,244 volumes.

**C. Institutes and Research Units :**

**College of Forestry:**

- 1) Institute of Forest Conservation
- 2) Forest Development Center
- 3) Forestry Research and Extension Center
- 4) Makiling Experimental and Demonstration Forest
- 5) Makiling Botanic Gardens

**D. Other Facilities:**

- 1) Museum of Natural History
- 2) Center for Policy and Development Studies
- 3) National Training Center for Rural Development

### III. Rules and regulations.

#### 1. Admission

##### A. Undergraduate

###### a. Domestic:

**Degree Programs:** Graduates of accredited high schools are admitted as freshmen on basis of University of Philippines College Admission Test (UPCAT) performance; applicants intended course and choice of academic unit; the quotas set for the unit and specific courses by the deans; and passing the National College Entrance Examination (NCEE).

**Nondegree: Forest Ranger Certificate Program:** Graduates of an accredited high school with a weighted average of 83% or better for all academic subjects, and who qualify in the (NCEE) may be admitted to this Program.

###### b. Foreign:

Filipino high school students from abroad must satisfy foreign student requirements.

Freshmen are required to meet the following: completion of high school program; qualifying in national or international exams such as Scholastic Aptitude Test or General Certificate of Education Examination; passing the NCEE; minimum score of 500 in the Test of English as a Foreign Language (TOEFL) for those students whose native language or language of instruction is not English.

###### Specific foreign country requirements:

**Australia:** School Certificate; High School Matriculation Certificate.

**Egypt/Jordan/Kuwait/Saudi Arabia:** 75% of maximum marks in the General Secondary Education Certificate Examination.

**Finland:** Passtotodistus Certificate (high school diploma); Vlioppilastutkintotodistus (matriculation certificate).

**Germany:** Passing of Abitur (final school examination).

**Hongkong:**

**Anglo-Chinese Grammar School Graduates:**

- a) 3 Pass with Hongkong Certificate of Education Examination, including English.
- b) 2 Pass in the University of Hongkong Advanced Level Examination.

**Chinese Middle School Graduates:**

- a) 5 Pass with Hongkong Certificate of Education Examination (Chinese) including English.
- b) 5 Pass in the Chinese University of Hongkong, Matriculation Examination, including English.

**India/Pakistan: Secondary School Certificate.**

**Indonesia: Certificate of Completion of senior high school; general average of 8 or better in the final year.**

**Malaysia: 3 Pass credit in the Malaysian Certificate of Education Examination;  
2 Principal Pass in High School Certificate Examination.**

**New Zealand: N.Z. School Certificate;  
University Entrance Examination.**

**Nigeria/Singapore: 3 ordinary-level Passes and  
2 advanced-level Passes in the General  
Certificate of Education Examination.**

**Thailand: Results of the Joint Higher Education  
Examination; general average of 80% or better  
in Matayom Suksa V (MSV).**

**United States: minimum score of 600 in both  
Verbal and Mathematics areas of the SAT.**

**B. Graduate:**

**Note: Sources do not list different  
requirements for domestic and foreign applicants.**

**a. Applicant must hold bachelor's degree or its  
equivalent from any recognized institution. PhD.  
applicants must hold a master's degree.**

- b. Completed application form must be submitted to the Graduate School, with the following:
- 1) official transcripts, in English, from each previous college.
  - 2) two letters of recommendation from former professors; if with a master's degree, a third letter must be sent from the major professor. These must be sent directly to the Graduate School under separate mail.
  - 3) If English is not the medium of instruction or native language, a certificate of English proficiency from a former professor of English is required.
  - 4) Non-refundable application fee of P100.00 for Filipino citizens, or U.S. \$25 for foreign nationals in bank draft or money order.

All documents and application must be received by the Graduate School no later than January 31 for admission to June semester, and June 30 for November semester.

C. Transfers

Undergraduate:

a. Domestic:

Application must be filed with the University at least one month prior to registration, accompanied by official transcript from each institution previously attended.

1. Within the University:

Application for transfer must be filed with current College. This, along with true copy of grades, is referred to the accepting college. If favorable, admission is granted provided that requirements of transfer are met; and the quota for transfer students in college concerned has not been met.

2. Change from the Ranger Curriculum to BSF:

Granted upon completion of all requirements for Ranger Certificate with weighted average of 2.5 or better; or completion of at least all the requirements in the first year program with weighted average of at least 2.0



**3. From Other Colleges and Universities:**  
No entrance test is administered. Transfer may be approved if student: has completed at least 33 academic credits; obtained a weighted average of 2.00, 86%, B or better for all collegiate academic units; has no more than 50% of units required to graduate remaining; and if the quota set by the dean of college concerned has not been met.

**b. Foreign:**

Foreign students must meet University requirements for transfer students. Advanced credit may be given upon review. The following documents must be submitted:

- a) Accomplished Foreign Undergraduate Admission Application (UPLB form #3)
- b) Official transcripts from all high schools and colleges attended and 2 copies of Examination Certificate, if any.
- c) Course syllabus, school catalogue and handbook of examination.
- d) Non-refundable U.S. \$20 in money order, cashier's or manager's check payable to UPLB, drawn from Philippine bank.
- e) Certification from reputable bank in applicant's country about student's capability to cover all expenses incurred while in Philippines.
- f) Official NCEE results.
- g) Copy of birth certificate of authentic passport.
- h) Immigration requirements.

Non-immigrant foreign students are also required to obtain a study permit from Ministry of Education, Culture and Sports, before enrollment each semester.

**Note:** No mention is made of graduate transfers, other than certain fees; see section G.b.

- D. Scholarships/fellowships**  
Nearly 50% of students each semester receive some type of financial assistance. Priority given to promising students with demonstrated financial need. Programs offered include Grants-in Aid; U.P.

**Government Scholarships various scholarships and study grants offered by the government and private companies or individuals; tuition fee discounts; assistantships and student loans.**

- E. Leave of Absence (LOA)**  
A prolonged LOA should be requested in written petition to the dean. Period is not to exceed one academic year.

For LOA during the second half of a semester, faculty members concerned shall be required to indicate class standing of student (pass/fail).

If three-fourths of the semester have elapsed, the instructors may give a grade of 5 if the student's grade was below 3.

No LOA will be granted during the last two weeks of a semester. In case of health problem, exception will be made.

- F. Academic Standards:**

**1. Grading**

System	
1 Excellent	3 Pass
1.5 Very Good	4 Conditional Failure
2 Good	5 Fail
2.5 Satisfactory	Inc Incomplete

**a. University graduation standards:**

The general minimum weighted average for individual colleges appears to be 2.0

**Graduation with honors:**

Summa cum laude	1.20
Magna cum laude	1.45
Cum laude	1.75

In the Graduate School, students must pass all courses taken.

- b. Department/Degree Graduation Standards:**  
Same as above.

**G. Tuition and fees:**

**a. Undergraduate**

**i. Domestic**

<u>Tuition:</u>	P40/unit
<u>Miscellaneous Fees:</u>	..
Laboratory	P100-200
Registration	P 30
Medical	20
Athletic	30
Library	100
Cultural	20
	-
<u>Student Fund Fees:</u>	
Publication	P 10
Student Council	5
Community Chest	0.50
<u>Other Fees:</u>	
<u>New Students:</u>	
Entrance:	P 30
Refundable Deposit	100
UPCAT application	P50
<u>Transfers:</u>	
Application	P 100

**ii. Foreign**

<u>Tuition:</u>	P40/unit
<u>Miscellaneous Fees:</u>	..
Laboratory	P100-200
Registration	P 30
Medical	20
Athletic	30
Library	100
Cultural	20
	-
<u>Student Fund Fees:</u>	
Publication	P 10
Student Council	5
Community Chest	0.50
<u>Other Fees:</u>	
<u>New Students:</u>	
Entrance	P 30
Refundable Deposit	100
Application (UPCAT)	-
Resident	200
Non-resident	US \$25
Non-citizenship fee	P 1000

**Transfer : Applications:**

Resident P 150  
Non-resident US \$20

**b. Graduate**

**i. Domestic**

Tuition: P89/unit

Miscellaneous Fees:

Laboratory P100-200  
Registration P30  
Medical 20  
Athletic 30  
Library 200  
Cultural 20  
-

Student Fund Fees:

Publication P 10  
Student Council 5  
Community Chest 0.50

Other Fees:

New Students:

Entrance P 30  
Refundable Deposit 100  
-

Transfers:

Application 100  
-

**ii. Foreign**

Tuition: P89/unit

Miscellaneous Fees:

Laboratory P100-200  
Registration P30  
Medical 20  
Athletic 30  
Library 200  
Cultural 20  
-

Student Fund Fees:

Publication P 10  
Student Council 5  
Community Chest 0.50

Other Fees:

New Students:

Entrance P 30  
Refundable Deposit 100  
Graduate Education Development -  
US \$500

Transfers:

Resident P 200  
Non-resident US \$25

c. General (applicable to all student categories).

Late Registration Fine	P 50
Change of Matriculation	10
Dropping of Courses	P10/unit
Leave of Absence	P 150
Removal	20
Validation	20
Certification	10
Graduation	150
I.D. Card	5
Transcript	
First Copy	P10/page
Recopy	5/page
Transfer: Registration	30
	-

H. Personal Expenses:

Figures are estimated for one year (two semesters = 10 months).

- a. Lodging  
P 800.00
- b. Board  
P 6000.00
- c. Textbooks  
P 1000.00
- d. Incidental expenses  
P 4100.00 ( Does not include travel,  
clothing and other miscellaneous allowances)

I. Support services:

Health: Hospitalization, consultation, dispensary, dental care, minor surgery, maternal and child care, X-ray, pharmacy, family planning, and referral service to tertiary hospitals in Metro Manila. 24 hour. Nominal fees are charged for special exams, medications and surgery. Consultations and other routine treatments are free.

Counseling: Individual and group sessions; psychological testing; new student orientation.

Career Placement: Available for students as well as graduates.

IV. Specific descriptions of courses with social science emphasis (see section 1.D.b. & c.).

This information is not included in the sources used.

1. Course title
2. Objectives
3. Topics
4. Reading list
5. Assignments, evaluation, and grading system.

V. Analyze the information gathered in 1., 2., and 4. for a number of institutions to determine the range and variation of social science integration in forestry curricula, and to highlight innovative approaches to integration/course content that might be generalized across the region.

This is the initial Curricula Evaluation. As more data is collected, comparative results will be available.

VI. Sources:

- a. University of the Philippines, Los Banos.  
Catalog of Academic Programs. Laguna, Philippines.  
200 pp.
- b. University of the Philippines, Los Banos. 1987. "B.S. in Forestry: Proposed Curriculum, Appendix F". Laguna, Philippines. p. 2.
- c. University of the Philippines, Los Banos. 198-. "The UPLB College of Forestry Today." Laguna, Philippines. 3 pp.
- d. Lantican, D.M. 198-. Response to "Request for Information: Workshop on The Social Sciences in Asian Forestry Curriculum". Laguna, Philippines. 2 pp.

Analyst: Christine S. Laporte  
June 1989

**Subsection C**

**INSTITUTE OF FORESTRY/ INSTITUTE OF RENEWABLE NATURAL RESOURCES  
Nepal**

**I. Program description.**

**1. Name & address of university/institution.**

**IRNR - Pokhara Campus  
P.O. Box 1  
Hetauda, Nepal**

**2. Name of department/dean.**

**Institute of Forestry**

**3. Objectives of department.**

**The Institute of Forestry (IOF) was established in Hetauda in 1941 to provide a training program for rangers and foresters within Nepal. The Hetauda campus continues to teach the Proficiency Certificate level program in Forestry.**

**In response to the growing challenges of managing Nepal's diverse natural resources, the IOF expanded its role, changing its name to the Institute of Renewable Natural Resources (IRNR) and opened a campus in Pokhara in 1981. IRNR seeks to meet the growing demand for trained natural resource managers in Nepal. The curriculum and goals of the Pokhara campus focus on an integrated approach to resource management with special attention to the growing problems of fuelwood and fodder scarcity in Nepal's hill regions. Pokhara, in the Middle Hills region of Central Nepal, was chosen as the new campus site for increased accessibility to students from remote regions.**

**Research activities are focused on watershed Reforestation Techniques, Erosion and Gully Control, and Agroforestry Techniques.**

**4. Degrees offered (BSc, MSc, PhD).**

**Currently two degrees are offered:**

- a. Proficiency Certificate**
- b. Bachelor of Science (BSc.)**

**A. Objectives of each degree.**

**a. The Proficiency Certificate training in Natural Resource Management is for those people seeking to enter the Ministry of Forests at the junior supervisory level.**

b. The BSc. of Renewable Natural Resources is offered in the fields of Forestry, Soil and Water Conservation, with training in Wildlife Management offered. This degree prepares students to become Forest, Soil and Water Conservation Officers under the Ministry of Forests.

B. List of courses to fulfill each degree, by year.

See Tables.

C. List any social science courses in other departments.

Not applicable.

D. Examine germane social science departments (e.g., human ecology) for forestry and biology requirements.

Not applicable.

## II. Facilities available to students in support of their studies:

### A. Campus Sites:

1. Hetauda: administrative, classroom buildings, men's housing facilities various research stations, including a small nursery enclosed on 90 hectares of forested land; women's housing facilities within walking distances.
2. Pokhara: administrative, classroom buildings, a library, a student center, laboratories, workshops, housing for men and women (total 400 students), faculty housing.

### B. Research Sites:

1. Watershed Reforestation Techniques, Erosion and Gully Techniques, and Agro-forestry Techniques:
  - a. Khairani Tar, Tanahu District
  - b. Nibuwater, Makwanpur District
  - c. Tamagarhi, Bara District
2. Farm Forestry Research (recently undertaken research to develop sound forestry extension techniques onto private farmland in manner appropriate to Nepal):
  - a. Karnaiya, Sarlahi District
  - b. Parwanipur, Parsa District
  - c. Khairani, Chitwan District



- d. Rampur, IAAS plots
- c. Taranagar, Gorkha District
- f. IRNR site in Pokhara

### III. Rules and regulations.

#### 1. Admissions

##### A. Undergraduate

##### a. Domestic

Applications for both programs are available from Dean's office in Hetauda, and are due in early Srawan (August) or at least one month before classes begin.

##### Certificate Level :

1. Candidates are required to have passed the School Leaving Certificate (SLC) examination with preference given to those students with higher scores in English, Mathematics and Science.

##### BSc.:

1. A BSc. or Diploma in General Science (Physics, Chemistry, Mathematics, Zoology or Botany)

##### OR

1. Certificate from IOF/IRNR plus three years practical field experience in Natural Resources Management (forestry, watershed management and wildlife conservation works).

##### b. Foreign

No information available.

##### B. Graduate

No graduate Programs are specified in available literature.

##### C. Transfers

No information available.

##### D. Scholarships/fellowships

With funds from the USAID-Resource Conservation and Utilization Project (RCUP), the Pokhara program provides scholarships and stipends as incentives to recruit high quality students, to increase the number of females admitted, to encourage students from remote areas of Nepal to apply and

to promote academic excellence.

Pokhara :

All students in good academic standing who are not receiving a stipend or scholarship from outside sources, and who are not receiving a departmental salary, educational pay leave, etc. may receive assistance.

Students at the Certificate Level will usually receive 200 NRs per academic year while BSc. students generally receive 4000 NRs per academic year.

Additionally, 10% of the students in each year of each Certificate and BSc. Diploma class will receive scholarships awarded for academic excellence.

Specific scholarships are also provided for females and students from remote areas, based upon academic excellence.

Hetauda:

Stipends are offered to 25% of the Certificate Level students awarded for superior academic performance. Within this 25%, two students from remote areas and one student with no financial resources are awarded stipends.

In addition, tuition and fee waivers are awarded to 14 students based on financial need plus academic merit.

E. Leaves of Absence

No information available.

F. Grading

No information available.

G. Tuition and fees

No information available.

H. Personal expenses

- a. Lodging
- b. Board
- c. Textbooks
- d. Incidental expenses

No information available.

- I. Support services (e.g., health, counseling, career placement)

No information available.

IV. Course descriptions (w/ social science emphasis, see 1.D.b. & c.).

1. Course title
2. Objectives
3. Topics
4. Reading list
5. Assignments, evaluation, and grading system.

This information is not contained in the sources available.

- V. Analyze the information gathered in 1., 2., and 4. for a number of institutions to determine the range and variation of social science integration in forestry curricula, and to highlight innovative approaches to integration/course content that might be generalized across the region.

I. Sources used.

a. 1985-1986. (Academic Year 2042/2043). Bulletin of the Institute of Forestry and Institute of Renewable Natural Resources. Pokhara Campus/SECID. Hetauda, Nepal. 23 pp.

b. 198-. Prajapati, K.P. and A.R. Tuladhar. "The Role of the Institute of Forestry in Community Forestry Development in Nepal". In: Banko Janajari, Vol. 1 No. 4, pp. 67-69.

c. ... Comments and proposed curricula changes, in response to Content Analyses Questions.

Analyst: Christine S. LaPorte  
June 1989

Table 1

	Social Science Emphasis	Social Science Component	Other	Elective Option
<u>Certificate Program/Year One:</u>				
<u>EXISTING CURRICULUM:</u>				
Nepali		X		
English		X		
Mathematics and Calculations			X	
Basic Silviculture and Forest Conservation			X	
Soil and Water Conservation			X	
Introduction to Renewable Natural Resource Management		X		
Practice of Renewable Natural Resource Management			X	
Introduction to Biology and Plant Identification			X	
Introduction to Extension Work in Natural Resource Management	X			
Surveying and Engineering			X	
Regular Field Works, Part I			X	
Physical Training/Games, Part I			X	
<b>TOTALS:</b>	<b>1</b>	<b>3</b>	<b>8</b>	<b>0</b>
<b>RELATIVE % (# CLASSES/YEAR):</b>	<b>8.3 %</b>	<b>25.0 %</b>	<b>66.7 %</b>	<b>-</b>
<u>Certificate Program/ Year One:</u>				
<u>PROPOSED CURRICULUM:</u>				
Forest Botany			X	
Zoology I			X	
Chemistry I			X	
Physics			X	
Mathematics			X	
English		X		
<b>TOTALS:</b>	<b>0</b>	<b>1</b>	<b>5</b>	<b>0</b>
<b>RELATIVE % (# CLASSES/YEAR):</b>	<b>-</b>	<b>16.7 %</b>	<b>83.3 %</b>	<b>-</b>

Table 2

	Social Science Emphasis	Social Science Component	Other	Elective Option
<u>Certificate Program/Year Two:</u>				
<u>EXISTING CURRICULUM:</u>				
Nepali Parichaya	X			
Law/Administration Rel. to Nat. Res.	X			
Wildlife Conservation in Nepal		X		
Agric./Rural Soc.-Village Crop & Livestock	X			
Harvesting and Logging			X	
Basic Forest Protection			X	
Personnel Management and Accounting		X		
Work Practice, Hand Tools, Effic.& Maint.			X	
Time Utilis. and Intermediate Techn.			X	
First Aid, Health and Hygiene			X	
Regular Field Works, Part II			X	
Physical Training and Games, Part II			X	
Attachment to Project Evaluation			X	
<b>TOTALS:</b>	<b>3</b>	<b>2</b>	<b>8</b>	<b>0</b>
<b>RELATIVE % ( # CLASSES/YEAR):</b>	<b>23.1 %</b>	<b>15.4 %</b>	<b>61.5 %</b>	<b>-</b>

	Social Science Emphasis	Social Science Component	Other	Elective Option
<u>Certificate Program/ Year Two:</u>				
<u>PROPOSED CURRICULUM:</u>				
Forest Botany II			X	
Animal Behaviour and Ecology			X	
Chemistry II			X	
Mathematics II			X	
Dendrology			X	
Intro. to Nat. Res.		X		
Silviculture I			X	
Forest Hydrology			X	
Basic Photogrammetry			X	
Forest Ecology			X	
Introductory Wildlife Management			X	
<b>TOTALS:</b>	<b>0</b>	<b>1</b>	<b>10</b>	<b>0</b>
<b>RELATIVE % ( # CLASSES/YEAR):</b>	<b>-</b>	<b>9.0 %</b>	<b>91.0 %</b>	<b>-</b>

Table 3

<u>Bachelor of Science</u>	<u>Social Science</u> <u>Emphasis</u>	<u>Social Science</u> <u>Component</u>	<u>Other</u>	<u>Elective</u> <u>Option</u>
<u>B.Sc. First Year:</u>				
<u>EXISTING CURRICULUM (3 Year Program)</u>				
English		X		
Mathematics I			X	
Mathematics II			X	
Introductory Botany			X	
Introductory Zoology			X	
Introductory Chemistry			X	
Introductory Physics			X	
<b>TOTALS:</b>	<b>0</b>	<b>1</b>	<b>6</b>	<b>0</b>
<b>RELATIVE % (# CLASSES/YEAR):</b>	<b>-</b>	<b>14.3 %</b>	<b>85.7 %</b>	<b>-</b>
<u>PROPOSED CURRICULUM (4 YEAR PROGRAM)</u>				
NO CHANGES				
<b>COMPARISON OF CURRENT v/PROPOSED:</b>	<b>NO CHANGE</b>	<b>NO CHANGE</b>	<b>NO CHANGE</b>	<b>NO CHANGE</b>

Table 4

<u>Bachelor of Science</u>	Social Science Emphasis	Social Science Component	Other	Elective Option
<u>BSc. Second Year:</u>				
<u>EXISTING CURRICULUM (3 Year Program)</u>				
Hydrology			X	
Intr. to Soil Science & Geology			X	
Introductory Statistics			X	
Human Resource Management	X			
Survey, Mapping and Draftsmanship			X	
Accounts and Procedures			X	
Resource Economics		X		
Forest Ecology			X	
Animal Physiology (for Wildlife concent.)			X	
Soil and Water Engineering (for Soil concent.)			X	
Forest Mensuration (for Forestry and Wildlife)			X	
Plant Physiology (for Forestry and Soil)			X	
<b>TOTALS:</b>	<b>1</b>	<b>1</b>	<b>10</b>	<b>0</b>
<b>RELATIVE % (# CLASSES/YEAR):</b>	<b>8.3 %</b>	<b>8.3 %</b>	<b>83.4 %</b>	<b>-</b>

<u>Bachelor of Science:</u>	Social Science Emphasis	Social Science Component	Other	Elective Option
<u>BSc. Second Year</u>				
<u>PROPOSED CURRICULUM (4 YEAR PROGRAM)</u>				
Dendrology			X	
Introd. to Natural Resources		X		
Silviculture I			X	
Forest Hydrology			X	
Basic Photogrammetry			X	
Forest Ecology			X	
Introductory Wildlife Management			X	
<b>TOTALS:</b>	<b>0</b>	<b>1</b>	<b>6</b>	<b>0</b>
<b>RELATIVE % (# CLASSES/YEAR):</b>	<b>-</b>	<b>16.7 %</b>	<b>83.3 %</b>	<b>-</b>

Table 5

	Social Science Emphasis	Social Science Component	Other	Elective Option
<u>B.Sc. Third Year:</u>				
<u>EXISTING CURRICULUM (3 Year Program)</u>				
Silviculture			X	
Forest Engineering			X	
Harvesting, Logging & Utiliz. (Forestry option only)				X
Remote Sensing			X	
Forest Management (Forestry option only)		X		
Statistical Methods & Exper. Design			X	
Seminar ( in area of concentration )			X	
Soil Genesis Morph./Classif. ( Soil option only )			X	
Forest Protection			X	
Soil Fertility and Plant Nutrition ( Soil option only )				X
Irrigation and Drainage ( Soil option only )			X	
Watershed Mgmt. (Soil option only)		X		
Agriculture and Range Mgmt.		X		
Wildlife Biology ( Wildlife option only )			X	
Nat'l. Parks Admin. and Mgmt. ( Wildlife option only )	X			
Ornithology and Mammology ( Wildlife only )			X	
Habitat Improvement & Wildlife Mgmt. ( Wildlife option only )		X		
Elective ( Project Paper )				X
<hr/>				
TOTALS:				
Forestry options:	0	2	8	1
Soil options:	0	2	9	1
Wildlife options:	1	2	8	1
RELATIVE % ( # CLASSES/YEAR):				
Forestry option:	-	18.2 %	72.7 %	9.1 %
Soil option:	-	16.7 %	75.0 %	8.3 %
Wildlife options:	8.3 %	16.6 %	76.8 %	8.3 %

	Social Science Emphasis	Social Science Component	Other	Elective Option
<u>B.Sc. Third Year:</u>				
<u>PROPOSED CURRICULUM (4 Year Program)</u>				
Forest Resource Economics		X		
Statistical Methods			X	
Soil Science			X	
Introd. Soil and Water Conservation		X		
Surveying and Mapping			X	
Silviculture II			X	
Forest Extension Methodology	X			
Forest Measurement			X	
Utilisation I			X	
Forest Engineering			X	
<hr/>				
TOTALS:				
RELATIVE % ( # CLASSES/YEAR):	1 10.0 %	2 20.0 %	7 70.0 %	0 -



Table 6

<u>BSc. PROPOSED FOURTH YEAR</u>				
Silviculture III				I
*Forest Mgmt.		II		
*Agroforestry		II		
Remote Sensing / Photo Interpretation				I
Watershed Management		I		
Project Paper Seminar				I
2 courses from one of the 3 groups of elective subjects ( Wildlife, Soil or Forestry options)				I
<hr/>				
TOTALS:	0	37	3	2
RELATIVE % ( # CLASSES/YEAR):	-	37.5 %	37.5 %	25.0 %
* Analyses of these two courses are not based on actual content evaluation (none provided); their categorization is assumed from titles.				

### SECTION 3

#### CURRICULUM REVISION PROCESS: Some Examples

**NOTE:** The purpose of this section is to show examples of the curriculum revision process. These models illustrate the administrative mechanisms through which the curricula at four sample institutions have been revised. Written descriptions are given of the revision process used at the Institute of Forestry, Chittagong University in Bangladesh (Subsection A), and the College of Forestry, University of the Philippines at Los Banos (Subsection B). The third example (Subsection C), from the Institute of Forestry, Tribhuvan University in Nepal, illustrates the curriculum revision process by using a schematic diagram. The fourth example (Subsection D), from the Faculty of Forestry, Kasetsart University in Thailand describes the revision process which resulted in Social Forestry becoming a new major within the forestry program.

## **Subsection A**

### **CURRICULUM REVISION PROCESS INSTITUTE OF FORESTRY, CHITTAGONG UNIVERSITY BANGLADESH**

(NOTE: This process was outlined by Dr. Celso Lantican, Forestry/Fuelwood Research and Development Project, Winrock International, Bangkok, Thailand and former Dean of the College of Forestry at UPLB.)

- (1) Institute faculty, with FAO staff assistance, define goals and objectives.
- (2) Faculty, with FAO staff assistance, prepares a draft revision of the curriculum. The revision includes:
  - o course titles, descriptions, lectures and laboratory hours, credits, prerequisites, special requirements
  - o course outlines
- (3) A consultative workshop is held to review the revised curriculum. Participants include representatives of:
  - o forest department
  - o forest research institute
  - o forest industry sector
  - o faculty
  - o university and institute officials
  - o alumni
- (4) IFCU refines curriculum through a committee in accordance with workshop recommendations.
- (5) Refined version of curriculum approved by the faculty.
- (6) Curriculum approved by university officials.

## Subsection B

### CURRICULUM REVISION PROCESS AT THE COLLEGE OF FORESTRY, UNIVERSITY OF THE PHILIPPINES, LOS BANOS

(NOTE: This process was outlined by Dr. Celso Lantican, Forestry/Fuelwood Research and Development Project, Winrock International, Bangkok, Thailand and former Dean of the College of Forestry at UPLB.)

Review of existing curricula is undertaken from time to time (usually every 4-5 years) at UPLB's College of Forestry to find out if the contents of the curricula are still relevant to national development needs and the requirements of the various sectors employing graduates of the College. The process usually takes 6-8 months to complete.

The steps in the process are as follow:

- (1) The Dean instructs the College Curriculum Committee to determine whether there is sufficient reason to modify the existing curricula. This committee is composed of representatives of the academic departments of the College.
- (2) Members of the Curriculum Committee consult their colleagues in their respective departments.
- (3) The Curriculum Committee meets and comes up with a set of recommendations.
- (4) The Dean takes up the Curriculum Committee recommendations with the College Academic Advisory Committee which is composed of the heads of the academic departments. The group decides whether or not there is a need for a curricular change and, if there is, how to go about identifying the changes. Identifying the changes is usually done through a consultative workshop where representatives of the following sectors are invited to participate:
  - o Government agencies involved in forestry activities (forest administration, research, extension, teaching)
  - o Industry
  - o The College faculty
  - o Alumni association
  - o University officials

The workshop tackles two major issues:

- o areas of emphasis of the curriculum considering national priorities and existing policies
- o subjects that should be incorporated in the curriculum

Workshop participants are generally divided into sub-groups:

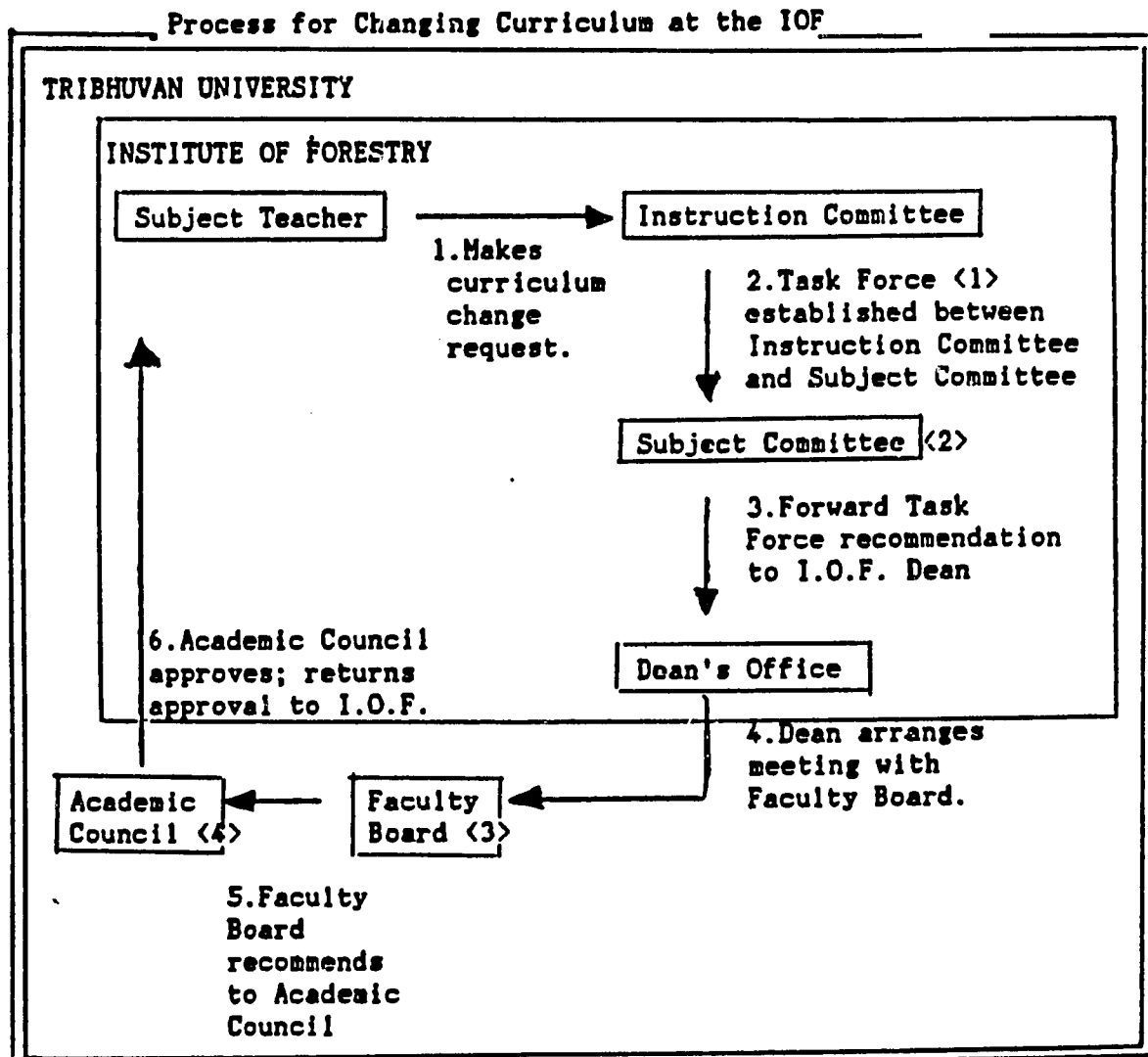
- forest biological sciences
- silviculture and forest influences
- forest reserves management
- wood science and technology
- social forestry

- (5) After the workshop, the Curriculum Committee meets to study the workshop recommendations and prepares a draft revision of the curriculum. The draft includes course: titles, descriptions, prerequisites, credits and course outlines, and the sequencing of the courses by semesters.
- (6) The draft is submitted to the Academic Advisory Committee which is headed by the Dean. This committee examines the draft, paying attention to the general structure of the curriculum, course titles and descriptions, outlines, etc., and the budget implications of the proposed changes. Refinements are made at this stage.
- (7) The refined version of the curriculum is presented to the faculty for discussion and approval. If further refinements are necessary, the curriculum is sent back to the Curriculum Committee.
- (8) Once approved by the College faculty, the curriculum is sent to the University Council for approval. The Council is composed of all professors of the University and is headed by the Chancellor.
- (9) After passing the Council, the curriculum goes to the University Board of Regents, the governing body of the University of the Philippines system for final approval.

Subsection C

CURRICULUM REVISION PROCESS  
INSTITUTE OF FORESTRY, TRIBHUVAN UNIVERSITY  
NEPAL

(Note: This process was outlined by the Institute of Forestry Faculty, Tribhuvan University, Nepal.)



**Notes:**

<1> The TASK FORCE includes members from I.O.F. and outside.

<3> The FACULTY BOARD membership:

From Tribhuvan University, Institute of Forestry

Dean

Asst. Dean (Academics)

Asst. Dean (Administration)

Asst. Dean (Hetauda Campus)

Chairman, Soil Conservation Subject Committee

Chairman, Wildlife Subject Committee

Chairman, Silviculture Subject Committee

Chairman, Forest Management Subject Committee

Chairman, General Subject Committee.

From Tribhuvan University, Central Administration

Planning Chief

Representative, Curriculum Development Center

(Faculty Board, continued)...

From the Ministry of Forest and Soil Conservation

Additional Secretary

Director General, Department of National Parks

Wildlife Conservation

Director General, Department of Forest

Director General, Department of Soil Conservation

Chief, Forest Survey and Research Office

<4> ACADEMIC COUNCIL Membership:

From Tribhuvan University

Vice-Chancellor

Rector

Registrar

Institution Deans (5)

Faculty Deans (4)

Chairmen from the Subject Committees (5)

Heads from the Central Departments (7)

Director, National Development Center

Directors of each Research Center (4)

Professors (2)

Scholars-at-Large (2)

## Subsection D

### CURRICULUM REVISION PROCESS THE FACULTY OF FORESTRY, KASETSART UNIVERSITY THAILAND

(Note: This process was outlined by Dr. Niwat Ruangpanit, Associate Dean, Faculty of Forestry, Kasetsart University, Bangkok, Thailand. The source is: Ruangpanit, Niwat. 1989. Education and Training on Social Forestry in Thailand. In The Social Sciences in Asian Forestry Curricula, Papers from the Workshop held November 27 - December 2, 1988 in Khon Kaen, Thailand, R.E. Clausi (ed), Tropical Resources Institute, Yale School of Forestry and Environmental Studies, New Haven, CT, USA.)

- (1) Prior to 1984, the Faculty of Forestry decided to develop a program to train undergraduates in the special skills needed for working more closely with rural communities.
- (2) In 1984, the Faculty of Forestry established a Curriculum Development Committee of seven, composed of a Chairman and one member from each of the six departments. The Dean of the Faculty served as a permanent advisor, and FAO provided the services of a consultant to periodically assist the Committee.
- (3) An opinion survey on priorities for academic training was administered to:
  - o Ministerial and high level administrators
  - o Regional and provincial officials of the Royal Forest Department and the Forest Industries Organization
  - o Managers of wood-based industrial companies
  - o Teachers of Kasetsart University's Faculty of Forestry
  - o Teachers of the Forest School, Phrae
- (4) Curriculum Development Committee discussed recommendations from opinion survey.
- (5) Results of the survey discussed at a National Workshop on Curriculum Development in Social Forestry, held by the Faculty of Forestry, 22-26 October 1984.
- (6) As a result of the workshop, the Committee decided Social Forestry should form a major subject paralleling existing Forest Resources and Forest Products majors.



- (7) The new Social Forestry major has a balance of anthropological or sociological related courses and forestry courses.
- (8) The new curriculum in Social Forestry was approved by the University and Government Authorities.

## SECTION 4

### GUIDANCE ON CURRICULUM CONTENT FROM SELECTED TOPICS OF CURRENT INTEREST IN FORESTRY CURRICULA

**NOTE:** The purpose of this section is to address the issue of which social science skills need to be emphasized in forestry curricula, focusing on the practical aspect (how foresters and resource managers in the field and rural communities can be more effective and accepted in their efforts) not just the academic perspective. Experts in Social Forestry have contributed their ideas on revising forestry curricula to adjust to present resource management needs in Asia, which are more socially related than previously acknowledged. The following entries are the result of "real situation" experiences and are of great value to forestry professionals, professors, students, graduates, technicians, and extensionists. This information can be used by forestry practitioners to enhance their effectiveness in the communities where they will ultimately work.

## Subsection A

### CURRICULUM FOR A COMMUNITY FORESTER

by

P.R. Tamrakar

Forestry Research Division

Nepal

**Note:** This curriculum was outlined by P. R. Tamrakar, a practicing forester in Nepal. He suggests some of the needs of a community forestry worker that should be addressed in his/her education.

#### 1. Concepts and History of Community Forestry

This topic should enable a student to understand the history of scientific forestry in Nepal. It should make the student aware of the existence of traditional patterns of forest management. A student should understand how the concept of community forestry was officially recognized as a means to conserve and manage the existing resource. One way to motivate the real work force may be to explain the history of community forestry and clarify its meaning in the context of current national and local development.

#### 2. Forest Legislation and Its History

A community forestry worker (CFW) should be knowledgeable of existing legislation. Existing educational programs address traditional requirements for different forest operations (e.g., protection, rules against encroachment on forest lands and taking of forest products). Currently, however, many CFW/Rangers are unable to articulate these to local people. It is critical for the CFW to be able to explain the details of these regulations to local villagers and to make local people aware of their legal rights. Greater knowledge of these details might help CFWs regain the faith of local people toward foresters which has been diminished over the past few decades. ... Additionally, it would be helpful to share the experiences of CFWs who have been reasonably successful in working with community forests. The sharing of experiences such as these can help the CFW understand what opportunities exist, what is expected of him/her, and what some of the constraints are to successful community forestry efforts.

#### 3. Present Forest Policy and Community Forestry Development Strategies

This topic would include details about present policies and the legal and organizational manipulations that are available to ensure the successful and smooth implementation of current policies.

#### 4. Socio-Economics of the Community

It is essential for CFWs to understand the reality of different communities. These individuals must be able to appreciate the environment where they work. Some of the following skill and knowledge areas need to be developed in the education of CFWs:

- How to design and implement social surveys
- How to study local needs
- Information on how, where, who, and when to meet local people to obtain information
- Information on the forest and rural agriculture economy

#### 5. Effective Communication Skills

One of the most powerful tools of a CFW is effective communication. This tool is particularly important in the Nepal case where most foresters are not very popular and retain a bad image. The most essential skills are:

- Language and local dialects
- Public speaking
- Efficient listening

#### 6. Education Should Stress Simple and Unforgettable Knowledge, including:

- species identification
- species uses
- species silviculture (coppice, light requirements, etc.)

#### 7. Development of the Right Attitude

Traditionally, becoming a forestry officer or ranger meant the individual would have a great deal of power enforcing local forestry laws. Today, however, students need to understand this role is no longer pre-eminent and furthering national and community development are social goals they should work toward. The education process can help support this new profile by teaching more about development goals and means of achieving them.

**Subsection B**

**GUIDELINES AND SUGGESTIONS FOR SOCIAL SCIENCES  
IN NATURAL RESOURCES CURRICULA**

**Source:** Messerschmidt, Donald A. 1987. Working Paper on a Social Science Curriculum for the Institute of Forestry, Nepal. A Consultant Report submitted to the U.S. Agency for International Development, Kathmandu, Nepal. July 10, 1987.

**Note:** The following provides "guidelines and suggestions for unit development, with supporting discussion and references to literature. It is best used as an advisory paper, to help campus instructor(s) in planning to revise the existing social science curriculum, in designing new courses, and in preparing short modules or units of social science content to fit into existing courses in the natural resources and management sciences. ..."

### 1.2.1 Relevant Theoretical Concepts.

An introduction to all of the basic theory of social science and rural development is not feasible or practical in the context of the IOF. The aim is not to create social scientists, but to sensitize the institute's students to social science concepts and methods and to prepare them to make practical application of social science knowledge and methodologies in their future work and research. Much of the emphasis on social science in this document is relevant to the student interested in a natural resource management career; but many of the topics are also relevant to Forestry (e.g., silvicultural) specialists, Soil/Watershed Conservation management scientists, and to Wildlife and Park Management specialists.

The following topics are considered to be among the most important and appropriate from the social sciences for use in Nepal's Institute of Forestry. They should not necessarily receive equal weight in the curriculum, and in some instances should only be introduced in brief.

Note: In reviewing the following material, considerable attention to theoretical detail is possible, but not recommended. Practical application should be first and foremost. Time is not available in the IOF classroom to go into great detail with many of the suggested topics. Rather, the instructor is encouraged to introduce the basic topics, provide relevant examples (e.g., in lecture, in assigned readings, and from staff and student experience where possible), to encourage discussion of selected case examples and to relate them to practical field experience. Students should be encouraged to focus primarily on main concepts and on their practical application. They should not be expected to memorize detail, but should be able to articulate concepts, basic principles and important ideas that will sensitize and prepare them to appreciate and understand a variety of social situations in the field. The theoretical and conceptual lessons learned in lectures, reading and writing exercises and in discussions based should be reinforced during fieldtrips, practical experiences, research and report writing exercises, in seminars and in internships with development projects in the villages.

#### (1) Fundamental Assumptions and Precepts

There are certain fundamental assumptions about society, and

one's perspectives on society, taught by anthropology that have importance to students of other sciences. The instructor is encouraged to introduce them early in the curriculum -- in courses like Nepal Parichaya, Rural Sociology, and Human Resource Management, for example -- and to refer back to them as circumstances arise and subject matter suggest throughout the IOF curriculum. It is also suggested that they be featured in special lectures, seminars, and on fieldtrip briefings and debriefings among staff and students alike. They include:

a. Cultural Relativism and Ethnocentrism. The premises on which individuals and groups of people judge other individuals and groups; the basis of cultural bias and ethnic prejudices, etc. The study of cultural relativism and of ethnocentrism will provide the student with an understanding of the tolerance necessary for broad understanding, sensitivity and appreciation for 'other' customs, explanations, beliefs and expectations.

b. Culture Shock. The basic steps one usually goes through when leaving the comfortable and expected ('normal') circumstances of one's own society and enters another (a new job, new social system, strange village or region, etc.) -- from initial euphoria ('honeymoon phase'), through first doubts and trouble, to eventual adjustment to the new circumstances of language, food, custom, etc. Understanding culture shock will help prepare the student for field assignments in new places, and for work among people of different ethnic or caste backgrounds.

c. Holism. The anthropological concept of viewing socio-cultural phenomena in their totality, considering all aspects of context -- social, cultural, religious, ideological, political, environmental, etc. A holistic perspective will help the student integrate all areas of study and knowledge in the curriculum of the IOF, and to prepare for entering the 'real world' of the village where decision making and social action are typically based on the locals' 'holistic' and integrated perception of resources and of life.

d. Cross-Cultural Approach to Learning, as a basic pedagogical tool in the social sciences (anthropology). The cross-cultural approach is the heuristic correlate of holism, teaching the student the importance of comparison and contrast, especially in considering the many observable varieties of expression and adaptation to the environment. Objectivity and sensitivity to 'other' systems of knowing and doing is also fostered. The combination of both the cross-cultural and holistic approaches will help foster the student's adaptation and acceptance of the integrated and interdisciplinary approaches of development.

e. Ethnography of Communications. The study of language and communications in their social and cultural setting. Forms of speech and their meaning; status and demeanor as expressed in styles or manners of speech. This topic includes effective communication for leadership and for good organizational and motivational skills. It should stress the concept and skill of 'good listening', especially in all attempts at facilitating people's participation in development.

**(2) Basic Social Theory: Elements of Social Organization**

a. Kinship Systems (particularly patrilineality, the most common form in Nepal). Examples of patrilineal systems in Nepal; examples of different systems of kinship and social organization by caste castes and ethnic group, with particular reference to the principle or dominant groups of hills, mountains and terai lowlands. (The work of Dor Bahadur Bista and others is relevant here; see also many articles in the journals 'Contributions to Nepalese Studies', 'Kailash', etc.; there are also a number of anthologies which include considerable case study material on social organization in Nepal; see, for example, in the same volume as reference 110 in Part 4.)

b. Ethnicity and Group Identity, including the ideological and functional basis and organization of caste in society. Examples of caste and ethnic-group-expression in Nepal include forms of language, dress, religion, food habits, and marriage customs and restrictions, etc. There should be a brief overview of the history, spread and recent changes in the practice of caste in Nepal.

c. Systems of Political Organization, Law and Society. Examples of the differences between caste law, civil law, common or folk law, etc., among various ethnic/caste groups of Nepal; including variations on approaches to political control and law and order in society by groups as disparate as the Hindu castes, Buddhist groups, etc. Local forms of law, order and leadership as they pertain to group organization and representation and as they interface with the panchayat system of local government (note the disparities, for example, in Bhotia societies that have mukhiya headmen, and the the expectations of panchayat and ward assemblies, as in the northern border areas).

d. Religious/Ideological Basis of Social Organization and Social Expectations. Variations of religious expression, particularly within multi-ethnic, multi-religious context of Nepal. Examples of religious orientation toward the natural environment (religious forests, sacred springs, water sources, fords and river junctions, holy mountains, the natural basis of pilgrimage sites, etc.) Examples from life experience (of students) and from case studies (in the literature) about religious beliefs regarding the environment etc. Various Buddhist, Hindu, Islamic and Shamanic concepts about the environment and cosmology, as well as to concepts of fate and pre-ordination, as they relate to rational choice and decision making in daily life and in dealing with the natural environment and natural resources. (There are many case examples in books on the religious beliefs and customs of Nepal.) The relationship between religion and the ideology of social organization should also be noted.

e. Economic Systems and Economic Organization. Various Nepalese forms of economic life; forms of group economic organization and cooperation (parma, nogar, guthi, dhikur, etc.; see: 111). The environmental and other socio-cultural basis for economic adaptation (see below re: Cultural Ecology, Adaptive Strategies, etc.; see also material on basic needs in Nepal; for example, see reference 22).



Because economic systems are closely interrelated with social and religious systems, and with basic environmental conditions (altitude, aspect, soil type, forest cover, rainfall, etc.), this topic from the social science perspective has considerable importance and should be used to enhance and broaden the perspectives of other courses, particularly Agro-forestry Systems, but also, conceivably, the more technical courses such as: For. Ecol.; Soil & Water Cons.; Comm. For. & Ext.; Nat. Res. Mgmt.; Res. Econ.; Met., Hydrol. & Watershed Mgmt.; Hab. Improv. & Cons.; Soil Gen. Morph., & Class.; et cetera. The social scientist should use his/her imagination, and coordinate the study of socio-economic systems with staff colleagues in other courses and seminars. Variations in socio-economic expression among villagers inhabiting different eco-niches, and according to variations in socio-cultural expression, is a good topic for fieldwork exercises, practicals, student papers and research.

The fundamental relationship between economic theory and of socio-economic expression among villagers on the one hand and the practice of community forestry, and especially agro-forestry, should not be overlooked. It is here that the essential inter-relationships between the natural environment, agricultural systems, forestry and the social science must be clearly pointed out and emphasized. This is where the 'holistic perspective' of anthropology and the interdisciplinary aspect of development take on practical application in the teaching and learning situation.'

### (3) Rural Development Theory and Practice

a. Basic Theories from Rural Sociology and Anthropology, various schools of Economic and Political Theory, etc. These include theories of 'Dependency', 'Underdevelopment', 'Centre-Periphery', 'Integrated Rural Development' (IRD), 'Intervention' vs. 'Innovation' approaches, 'Top-Down' and 'Trickle-Down' vs. 'Bottom-Up' and 'Participatory Development' (including the 'User Group' and 'Income Generating' schemes commonly used in Nepal), et cetera. For excellent work on the theory and methods of rural development in the developing world, see references 125 and 38.

An important topic in the social science of development is 'Innovation' -- i.e., the theory of innovation as the basis for cultural change (see: 19).

For other titles on development, change and innovation, see: 1, 3, 5, 22, 26, 38, 41, 56, 57, 60, 65, 66, 67, 79, 116, 118, 120, 126, 149, 150-151, 158.

Another topic of considerable relevance to Nepal is Migration Theory as it relates to development and change in society.

There is an exceptionally large amount of literature on development theory and practice, focused on international, cross-cultural, integrated and interdisciplinary aspects and case studies. The subject is particularly important given Nepal's decentralized development program (see the Decentralization Act of 1982 its Bye-Laws and Amendments) and given Nepal's emphasis on Integrated Rural Development (IRDs). For a thorough discussion of various facets of rural development theory, see reference 156.

b. People's Participation' in Development. People's Participation is here defined as local villager involvement in development through the following sequential steps: conceptualization, planning, resource mobilization, implementation, management and maintenance, benefit sharing, evaluation and control (after Lohani, references 84 and 95). There are many references to case studies of people's participation in Nepal and elsewhere. Many of the following references relate to other special topics such as the relationship of social science to community forestry development, water resource management, gender issues in development, rural energy development, etc. Some relate to the concept and policy of decentralization, as found in Nepal, especially in reference to the User Group concept. See: 1, 13, 14, 15, 16, 17, 22, 26, 27, 32, 38, 41, 42, 48, 49, 51, 56, 57, 60, 61, 62, 63, 65, 66, 67, 68, 71, 79, 81, 91, 94, 95, 98, 105, 106, 112, 111, 115, 116, 117, 118, 120, 122, 124, 126, 132, 135-137, 149, 155, 156, 157.

Note: Special attention should be given to the concept of 'beneficiary participation' in Nepal and the government's encouragement of 'user groups' for local level citizen involvement and economic productivity among the very poor. This discussion topic should be incorporated into courses such as For. Law & Admin.; Res. Econ. and Pol.; Com. For. & Extn.; For. & Woodlot Mgmt. & Landuse Planning; Nat'l Park Admin. & Mgmt.; and Extn. Methods.

Similarly, Nepal's successful experimentation with the Small Farmer Development Programme (SFDP), and its emphasis on small, non-governmental, local user groups is important in the context of decentralization and panchayat development efforts. All of these efforts have direct implications to forestry, park management, and other natural resource management, conservation and utilization in Nepal.

IOF students and staff should be conversant in the relationship between development theory, decentralization as it is planned and practiced in Nepal, and such ancillary non-government development programs as the SFDP. The experience of various Integrated Rural Development Projects (IRDPs) in Nepal is relevant here particularly in forestry development and soil and watershed conservation activities; likewise, experience in park and wildlife development and management. Keep in mind throughout this discussion the essential interrelationship between agriculture and forestry, and of the discipline of Agro-Forestry which links them together in concept and in practice.

The user group concept and its relevance to community forestry and other natural resource management and development schemes in Nepal should be thoroughly reviewed and discussed. Students on fieldtrips in districts where agricultural, agro-forestry or community forestry management or production user groups are common, should be encouraged to discuss them with villagers. Information about the socio-economic policies and impacts of the community forestry programs across the nation (e.g., the Community Forestry Development Project, the Nepal-Australia Forestry Project, and their various forms of adoption on the Rapti Project and the former Resource Conservation & Utilization Project, as well as anticipated changes forthcoming under the new Forestry Master Plan) and its relationship with

decentralization should be incorporated into classroom and field-trip discussions. The socio-economics of decentralization, successful user group activity, and community forestry development are especially important topics for courses dealing with natural resource law and development policy.

(4) Human and Cultural Ecology; Cultural Adaptation

This component should complement other courses in the curriculum dealing with concepts of Ecology (e.g., For. Ecol & Plant/Tree Ident.; as well as any other new courses or seminars on general ecology that might be designed and implemented). There are a variety of excellent works in the literature by Human and Cultural Ecologists such as Bennett, Moran, Hardesty, Netting, Spooner, and others. The publications list of Westview Press (Boulder, Colorado), among others, should be checked for new monographs, texts, and anthologies dealing with concepts of human adaptation to the environment, resource utilization, cultural ecology, etc.

The study of cultural and human ecology has many facets. Among those that should be brought to the IOF curriculum are the Eco-System Concept, use of the Biological Analogy in the social sciences, Cultural Adaptation and Adaptive Strategies as they relate to adaptation of human groups to the natural environment, the concept of Eco-Niche as used in terms of cultural adaptation, Natural Equilibrium Systems, Bio-Cultural Feedback in Nature, et cetera.

These and other concepts should be introduced in specific classroom units, as well as in relation to fieldtrips, field research and practical experiences by students. This is a very large field of professional interest and application, one which is closely related to the study of Socio-Economic Systems (above), as well as with concepts of natural resource management and the role of indigenous groups, traditional knowledge and local systems of resource management (discussed below).

A cross-cultural, holistic, integrated and interdisciplinary perspective should be carried throughout, thereby preparing the student to encounter the various forms of adaptive expression among human groups vis-a-vis their physical environments, and their reflection in social and economic organization. Emphasis should be placed on the logic and rationale for various alternative forms of adaptation, and on the relative merits and demerits of each system in light of natural resource conditions and of national resource policy.

For example, the student should become at least minimally aware of the varieties of cultural-ecological expression and the range of adaptive strategies found within Nepal, and in the surrounding region. These should be closely coupled with other coursework describing the major physical environments representative of Nepal's tremendous diversity: e.g., sub-tropical and temperate forest, riverine, hill and mountain, alpine, dry upland steppe and brush/grasslands, etc. Examples of human strategies of adaptation to Nepal's environments include: (a) indigenous Hunter/Gatherers of the sub-tropical forest (e.g., the Raute of SW Nepal, and related groups in north, central and eastern India); (b) traditional Swidden (Slash & Burn) Farmers in the

temperate and sub-tropical forest (Chepang, Kusunda, and others); (c) Peasant Farmers of the hills, river basins, sub-tropical lowlands, etc. (the majority of Nepalese agriculturalists; discussion should include the rudiments of a theory of peasantry and peasant economics); (e) Highland Pastoralists and Traders of the drier northern valleys and mountains (Tibetan border people; various Bhotia, Sherpa, and other groups), (f) mixed Agro-Pastoralists and Transhumant Herders of the upper middle hills, temperate forests and alpine highlands (Gurungs, Magars, and others), et cetera.

Of course, there are many variations in adaptation, and many combinations not specified here. The literature is rich with case studies of these groups, in Nepal, India, Tibet, and elsewhere in Asia.

In all of these examples, discussion should center on overall adaptation to the natural resources of the environment, and particularly human use of forests and forest resources including soil, water and wildlife. The role of human groups as an integral part of the ecosystem, cohabiting space with other living and inanimate natural resources, should also be stressed, including the destructive as well as the supportive relationship between them. This is an opportunity to orient the student to an appreciation for the frequently positive role of traditional human groups as a part of their ecosystem, as well as of their often negative or potentially destructive role. The causes of imbalance between Man and Nature should also be explored (outside intervention, population/resource imbalance, etc.). (See also the discussion, below, about the positive aspects of Indigenous Technical Knowledge and Traditional Systems of Resource Management.) The concepts of a Natural Equilibrium (or Ecological Balance) between Man and Nature, and of the nature of Bio-Cultural Feedback are important here.

(5) Indigenous Technical and Environmental Knowledge, and, Local Systems of Social Organization for Resource Management

The distinctions between 'scientific knowledge' and 'folk knowledge' are brought out in a discussion of Indigenous Knowledge. Similarly, the differences and similarities between 'scientific management' systems and 'local, or folk management systems' are encountered in discussions of local systems of social organization and cooperation. The importance of traditional systems of knowing and doing cannot be overstated or underestimated in the management of natural resources in a multifarious society like that of Nepal. The User Group concept in Nepal, and its corollary in forestry and resource management in the development of local forest committees, etc., demonstrates the importance of indigenous systems of thinking and doing in rural development.

Fortunately, there is a growing literature on the subject of indigenous systems, including relevant methodology (see Ethno-Science, Part 1.2.3(6), below). While a single good primer on the subject has not been written, there is an excellent anthology from the Institute for Development Anthropology by Brokensha, et al; see reference 24. For selections in the social science of indigenous knowledge systems, see also: 3, 24, 32, 33, 38, 70,

79, 84, 88, 89. For references specific to indigenous or traditional systems of social organization, with special reference to cooperative local organizations for resource management, see: 110, 111, 112, 119, 122.

### 1.2 Other Topics Integrating Social Science with Natural Science and Management Skills

There are a number of other topics of importance to resource scientists and managers and to development officers in Nepal. The following list is not exhaustive, but is suggestive of the relationship between resources management and development, on the one hand, and socio-cultural issues in society, on the other. These topics can either be assigned as special topics for research papers or addressed in a seminar series by experienced scientists, resource managers or development specialists familiar with them. They should be integrated into other appropriate technical courses in the curriculum. The important thing is that students begin to get a feel for the critical importance of sociological variables in what appear, otherwise, to be mostly technical and non-sociological subjects.

#### (1) Rural Energy and Appropriate Technology

The study of rural energy and of renewable resource-based technologies is presently handled in the last year B.Sc. course on Harvesting and Utilization. Given the importance of energy usage from forest products, it is suggested that this topic be expanded, and that it include study of social factors in rural energy development and usage. (For example, social factors involved in the installation, use and frequent abandonment of improved stoves is quite useful for forest management students who may become involved in rural development projects with improved stove programs; other examples may be developed...)

There are many sources in the literature that bring a sociological/anthropological perspective to rural energy, see for example: 9, 10, 11, 12, 13, 14, 15, 16, 31, 74, 77, 81, 90, 93, 104, 124, 142, 152.

#### (2) Water Management (Including Drinking Water Systems and Irrigation).

References: 32, 37, 60, 107-109, 117, 126, 157, 159.

#### (3) Common Property Resource Management and Protected Area (Park) Management.

References: 32, 61, 69, 125, 130, 145.

(4) Agriculture, Farming Systems and Agro-Forestry  
(or Farm Forestry)

Agro-Forestry, in particular, has important sociological variables. A number of excellent studies exist, but the field is relatively young and a good literature drawing together all of the component parts of this multi-disciplinary topic has yet to be written. The following references include all aspects of Agriculture and Agro-Forestry, with some attention to Farming Systems Research. These topics, by their very nature, demand attention to socio-cultural issues. The International Council for Research on Agro-Forestry (ICRAF) in Nairobi, Kenya, has developed a strong social science unit to provide the attention due to sociological variables.

References include: 17, 25, 33, 34, 36, 39, 40, 50, 70, 78, 92, 114, 125, 130, 138, 141, 161.

(5) Gender Issues (Women in Development).

This is a critically important topic which pervades all of the various topics and technical subjects dealing with natural resource management science. The study of Gender Issues is important for foresters and other natural resource managers in order to gain proper perspective and appreciation for the critical role that women play in the household economy and, particularly, in the utilization of natural resources (particularly forest products -- fuel, fodder, etc. -- and water). Because of women's intimate relationship with natural resources, it is important to understand and appreciate their potentially important role in conservation and development.

For Nepal, the principle published information on women's roles is the multi-volume series of case studies and analysis of 'The Status of Women in Nepal'. This research is aggregated and concluded in reference 2. Other relevant sources are: 31, 32, 43, 44, 45, 47, 52, 75, 76, 81, 82, 83, 86, 87, 92, 146, 152, 160, 161. Note that many of these titles are also cross-referenced with other topics (energy, forestry, agriculture, etc.) which suggests pursuing a broadly integrated approach to gender issues throughout the curriculum.

1.2.3 Methods: Social Science Tools for Resource Managers

The purpose of teaching IOF students the rudiments of social science methodology is to give them the ability to examine social and human resource data quickly and accurately. These methodologies fit quite well with the purpose and structure of the Human Resource Management Course. Or, alternatively, they could be taught as a short course or seminar topic preparatory to field exercises by advanced students. When taught, they should be followed up by immediate practical exercises. Field method exercises can be tried out during the regular Friday field excursions by advanced students. They can also be demonstrated, briefly, in special seminar lecture-discussion-exercises in the classroom. One suggestion is to assign practical exercises using various methodologies for weekend homework to the students. Some of methodology practice -- e.g., interviewing, participant-observ-

tion; collecting and analyzing semantic domains, etc., described below -- could be performed on the IOF campus itself among the students and staff; or conducted in a nearby bazaar or village community setting. It is preferable, the first time, to conduct these exercises in a controlled setting -- on campus. (Care should be taken to alert students not to appear secretive or suspicious, and to clearly identify themselves as institute students on assignment, if asked. Proper politeness and respect toward informants is mandatory.)

There are a number of useful methodologies from the social sciences. They include:

### (1) Participant-Observation

This is the principle or basic technique of anthropology in field research. There is a large literature, and it is featured in every textbook on social or cultural anthropology and natural sociology methodologies. It implies, basically, that the researcher play the role of a member of the group under observation (e.g., forest or irrigation user group, village panchayat or ward council, cooperative harvesting group, etc.), and make on-going observations about group organization, function, purpose, style, leadership, decision-making, and cultural variables such as attitudes, beliefs, values, etc... In some government appointed positions, in district forest offices for example, junior forest officers are frequently delegated to be members of some user groups and committees, as the 'member secretary', etc. These roles provide an excellent practical experience with participant-observation.

### (2) Interviews

Interviewing techniques basically fall into 2 categories -- structured and unstructured.

a. Structured Interviews are conducted by means of a prepared list of questions. The interviewer may read the questions from a list, or hand out copies of printed questionnaires. In the structured interview, the researcher must take care not to ask leading questions or assume he/she knows the answer before the interviewee has a chance to complete the answer. In other words, the researcher should take nothing for granted.

b. Unstructured Interviews are interviews conducted without a formal list, but with categories of questions present in the mind of the interviewer. The interviewer begins with a question or general topic, and allows the conversation to flow freely along whatever lines the interviewee takes. The interviewer must, however, keep the conversation on the topic selected, and not allow it to wander too far afield. This type of interview allows the informant to speak of issues and topics in the order he or she thinks is most important or relevant. The kinds of information gathered by the unstructured interview can sometimes tell the researcher a great deal about local priorities, information which is, itself, quite useful in sorting out what is most important in the minds of villagers, for example.

**(3) 'Key' or 'Expert' Informants**

Identifying and Using key informants or local experts are important skills that allows the researcher or manager to reduce the amount of time necessary to retrieve important information in the field. The 'key informant' is a recognized local 'expert' in a particular topic (forest harvesting, fuelwood types, minor forest products, village energy systems, farming, trading, blacksmithing, etc. -- the list of subjects is endless). There are many techniques by which to select the key informant, but one of the easiest is to ask selected individuals in the village who are, themselves, experts on village life (e.g., a school teacher, tea shop owner, headman, etc.). It is often useful to ask the same sorts of questions of several key informants in order to get an representative sample of opinion about a topic.

**(4) Secondary Sources**

Identifying and using secondary sources usually implies library research with published articles and books, as well as with unpublished papers, reports and other documents. The use of such materials is sometimes quite important in the preparation of research proposals and seminar papers. Identification of secondary sources should be part of the regular IOF instruction in the use of library facilities. Note, however, that many secondary sources may not be available in any one library or office, but may require the student or staff person to search for materials in a range of government offices, project offices, with non-government organizations, etc. A number of sources are given in the Part 1.3: Resources, below.

**(5) Social Surveys**

The use of social surveys is sometimes linked to structured interviews, above. Social survey techniques are well developed in Sociology and Rural Sociology, and are quite useful in determining trends among the population (e.g., statistical averages, means, medians, etc., or more specifically, for example, the rate of use and relative success or failure of improved stoves in project areas; or distribution and use of alternative energy systems in villages, etc. -- again, the list of subjects is endless).

Several aspects of survey work are discussed here; more may be found in textbooks on survey techniques for the social sciences.

a. Rapid Rural Assessment. One extremely useful survey methodology is known as the 'Rapid Rural Assessment' (RRA) technique. It is widely used in international and rural development work, and has been published and discussed at length by associates of the Institute for Development Studies at Sussex University, in Brighton, England. Some useful references to RRA literature are noted below at the end of this discussion of methods.

b. Computer Technology. Survey techniques often require sophisticated computer software, as well. Computerized research



techniques should be taught along with the social survey methodology. There are a number of excellent software packages available for most standard computer systems.

There are several excellent primers in social survey technique available on the market. The social scientists in the institute should select one or two use in classes and for the permanent library collection.

(6) Ethnoscience, including Ethno-Semantic or Semantic Domain Analysis

Ethnoscience, per se, is a very sophisticated research technique, supported by an equally interesting body of theory based on a considerable expertise in linguistics. It requires more expertise than is necessary for our purposes here. (It would be quite useful, however, if an experienced ethnoscienceist, such as an Ethno-Botanist, were to present a seminar lecture or series of lectures on the subject, coupled with field demonstration, to the students and staff of the IOF.) In professional hands, ethnoscience is a powerful research tool.

One of the easier and more adaptable and applicable variations of ethno-science is the study and analysis of select 'cultural scenes' by the use of a simple semantic analysis (i.e., an analysis of the terminology used to describe a particular subject, such as a forest, minor forest products, firewood, water, soil, wildlife, birds, etc.). This is a technique which, in its simpler, more direct forms, is quite useful to a resource manager in determining how villagers, for example, conceptualize the forest, its products and their uses, or its bounds or ownership, etc., based on the words and phrases used to describe it and on their definitions and explanations.

(7) Social Impact Assessment (SIA)

Social Impact Assessment methods are also useful to a project or natural resource program manager. They are widely used to assess the impact of particular interventions or activities among a population, in terms of economics, social, cultural and environmental changes (e.g., the opening of a new industry, or industrial expansion or closure). SIA is often used in conjunction with Environmental Impact Assessments (mostly in the U.S.A.) on projects involving alterations to the physical or natural environment (e.g., the establishment of a new park, a change land use laws, the construction of a road or irrigation canal, etc.).

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The social science adviser assigned to the IOF should be familiar with most or all of these research techniques and methodologies; they need not be greatly elaborated here, except to say that these examples have been selected because of their relative ease of application and use, and their effectiveness in data collection of relevance to the natural scientist or resource manager in the field. They require no special tools or equipment, except a good understanding of their operation, their

strengths and their weaknesses or limitations. It is recommended that the IOF social scientist familiarize himself/herself with the use of these techniques, and be prepared to introduce them quickly and simply to the students with appropriate practice exercises.

There are several textbooks available on the market; such works should be placed on reserve in the library, available to all interested staff and students. One exceptionally comprehensive methodology textbook is #133. A practical introduction to the study of Semantic Domains, helpful in learning about how people perceive, organize and categorize their environments is found in #147, complete with a step-wise field project design, and in related methodology texts by Spradley et al. Problems with survey design in development work, specific to Nepal, are discussed in #28 and 148, and for other development survey limitations, see reference 33.

The following references all deal with the methodology of Rapid Rural Assessment (RRA), a useful tool for the busy field officer, or researcher whose field time is short. This methodology is often conducted with small interdisciplinary teams of individuals: 20, 21, 30, 33, 35, 37, 38, 72, 73, 78, 96, 123, 131, 138.

Other titles on methodology include: #6, 13, 22, 25, 32, 33, 39, 40, 46, 64, 97, 99, 124, 125, 133, 134, 147, 148.

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The literature noted here is merely a small sampling of potential sources in the social science of renewable natural resources. They give some indication of the type of material that should be in the IOF library and available to faculty and students alike, for research and study purposes. Many of the titles are specific to Nepal or the Himalayas, although for purposes of cross-cultural exposure, there are a few international titles given. There are works of theory and of method on the list, as well as numerous descriptive case studies that combine both. Note that a great many of these titles reflect interdisciplinary and integrated approaches to the topics. This list of references is primarily suggestive, and is by no means exhaustive. Most of these titles are available in Kathmandu; see Section 1.3 for suggested locations.

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## Subsection C

### THE TECHNICAL-PROFESSIONAL FORESTRY SCHOOL LINK

**Source:** Stevens, Mervin E. 1988. The Technical-Professional Forestry School Link. In Expert Consultation of The Asian Network on Forestry Education. Regional Office for Asia and the Pacific (RAPA) Food and Agriculture Organization of the United Nations, Bangkok, Thailand. June 15-17, 1988.

**Note:** "Special education attention must be directed to ways of providing more income to rural people through appropriate forestry or forest-based processing activities. Besides the basic knowledge in forestry, the forester should be knowledgeable about community organization. The technical and professional training must stress the human aspects of forestry in order to meet the needs of people and to involve people directly in the activities beneficial to them. The syllabus for both technicians and professionals should be updated with subjects like:

- Introduction to Social Science: Description of social science and terms used.
- Attitudes and Motivation of People: What motivates people, how are attitudes formed and why do people act the way they do?
- Population Dynamics and Structure: What is the meaning and inference of fertility and literacy rates?
- Women and Children in Forestry: The history and education needs.
- Community Development and Settlement: Organization, who manages the community, land tenure and landless issues.
- Social Behavior and Economics: The relation between social and economic sciences.
- Management Principles: The process of management and management by objectives.
- Work Group Dynamics: Conflicts in management, group leadership and understanding how groups work."

## THE TECHNICAL-PROFESSIONAL FORESTRY SCHOOL LINK

1. For every professional forester there are 4 to 6 "foresters" who have attended a technical or guard school. These technicians are the front line forestry staff who are most likely to come in first contact with the public. It is this early approach where initial impressions on forestry are made. This is the time when there is opportunity to gain public interest and support for forestry programmes and projects.
2. According to the 1986 FAO World List of Forestry Schools there are 196 non-university level schools and centers for study in forestry, forest products and related fields versus 123 university-level institutions in the Asia-Pacific Region. These figures do not include the developed countries of Japan, Australia, New Zealand, etc. The 1978 appraisal study of Lantican has not been up-dated, but after a decade, the proportion of professional to non-professional graduates appears to be the same. For example, in Thailand the yearly output at the B.S. and M.S. level is about 185 and at the two year certificate level about 250.
3. The technician is seen as a person who must be equipped with basic physical, manual and mental skills. Their training is different from the professional in the degree of theory and concepts taught in the classroom. A larger share of the technicians education is on the practical approach. Both the professional and technical forester are viewed by their peers as being rugged, strong and capable to take on the rigors of working in a difficult environment. Entrance to many technical schools still requires passing a physical endurance test.
4. The profile of a technical school entrant seems to be one of a person who could not make the grade for acceptance to a university-level school, but shows initiative, ruggedness and potential to work in the woods and not the office. Women are not accepted. Most professional schools will accept a quota of upper percentile technical school graduates for continued study.

5. Most technical schools are under the control of departments of forestry. The schools are removed from the oversight of educational ministries. The curricula are designed to fit the traditional need to know, top-down approach to the forestry job. Instructors are normally seconded from government forestry departments and have little or no background in teaching methods or opportunity for education follow-up. There is both a holdover of the colonial approach to teaching and military discipline style. In recent years several technical schools still had a schedule of military type training in the morning (calisthenics, parade drill, and uniform inspection) and academic classes in the heat of the afternoon. Technicians in some countries are still taught how to use guns.

6. The traditional forestry courses are insufficient to adequately prepare these people for this new thrust in forestry programmes (Ruangpanit, Songsakul and Stevens, 1988). Manpower and technologies in community forestry are extremely important. The forester, both technical and professional, must have a high perception of people problems and needs and be skilled in the technologies available to implement community forestry projects and programmes. The public has not learned to differentiate between a professional and a technician. To them a forester is a forester, and degrees are not commonly recognized.

7. The practice of forestry that sincerely involves the community requires the knowledge, skills and a reorientation of attitudes on the part of foresters and other forest workers. In other words, if the approach of "using forestry for the people" is to succeed, a new type of forester is required. Unfortunately, the corresponding changes in forestry education and training, needed to support this change, have progressed slowly. Except for the numbers used Lantican's (1978) appraisal of forestry education and training in Asia and the Far East presents many points that are still valid today. For example, Lantican's summary points out "The main thrust of forestry education in the region should be in the technical and vocational levels, but professional training also requires attention and support." Yes, there has been change and many of the recommendations suggested by Lantican have been implemented, but the need for improvement continues.

5. While community forestry is still in its modern infancy, it has been accepted as a concept of great potential in enhancing local community development through the integration of sociology and forestry technologies. Being an evolving approach in rural development, community forestry still needs two very important support components: education and training for manpower development and research support for development of technologies.

9. The orientation to training and educating foresters and forest workers, at all levels, has undergone a transition since 1980 in Asia. The motivation for this evolution is recognition that forestry is about people. Curricula at the forestry schools are being strengthened with social sciences, other academic curricula are including forestry subjects, and there is an increase in short courses emphasizing the social science of involving people in community forestry decision making. In India, professors at agriculture colleges have been undergoing retraining for forestry in order to bridge the gap between forestry and agriculture and help graduate people with a better understanding of the interrelationships. In Nepal the recently established Institute of Forestry is near implementing a donor assisted programme of accelerating social science into the curriculum. In Thailand FAO is assisting with training of people in extension. People, both foresters and the public, are the focal point for the surge of retraining and education. However, this surge is at the professional level. It has not reached the technical schools to the degree required.

10. What are the links between the technician and professional that dictates a reorientation of the education being offered at the technical level? They are:

- (1) The technicians are normally trained by professional foresters.
- (2) Technicians work under guidance of professionals.
- (3) The technician is the long term local link to the community, whereas the professional is frequently transferred.

- (4) Both come in contact with the public, but the technician has greater access.
- (5) There is an overlap of knowledge. The professionals education, however, goes into greater depth on a subject and has the flexibility to specialize or delve deeper into the subject.
- (6) Except for the office, their working environment is the same.
- (7) In the eyes and mind of the public they are both called foresters.
- (8) Both are seeking to develop and increase the general public's awareness to the management of forests.
- (9) Both attempt to fill gaps in forestry information between the public and policy maker.
- (10) Both work within interdisciplinary and multidisciplinary management organizations.

11. The updating of curricula for technicians has not kept pace with that of the professionals. And as stressed elsewhere, this must change because technicians are normally the first within forestry organizations to come in contact with the masses of people. Some of the questions to be asked are:

- What constitutes a relevant education of technicians in order for them to be able to interact with a community?
- What changes must take place in the education of technicians to overcome the out-dated philosophy that foresters are an extension of the military?
- What can both technicians and professional foresters do to educate people in all communities about forestry? What changes in their education needs to take place for them to be able to do this?

- What are the technicians continuing education needs?
- What changes in policy within countries are needed to bring about change?
- What funding is required to adequately train staff?
- What kind of re-orientation is needed for technical school instructors, so they are able to cope with the new education needs?
- What is the link between the technician and research?

12. In August 1988, there will be an International Conference on "Educating Forest Technicians into the 21st Century" at Paul Smith's College, Paul Smiths, New York, U.S.A. Paul Smith's College is an independent two-year school. The conference objectives are:

- To clearly define the problems associated with educating forest technicians to meet the challenges related to forestry in both the developed and developing world now and into the 21st century;
- To determine realistic solutions to the problems that are identified;
- To have participants utilize the problems and solutions identified at the conference as catalysts for implementing change in forest technician education in their respective countries.

13. The outcome of the conference should be of direct interest to this forum.

#### SUMMARY

14. Forestry education programmes must be directed toward the development of staffs prepared to serve community forestry. A staff of foresters equipped with the technologies of implementing community forestry is extremely important. The forester, at all levels, must have a high perception of people problems and needs and be skilled in the technologies available to implement community forestry projects and programmes.

15. This redirected focus is most important at the technician level, particularly when it is realized that for every professional there are about 4 technical staff. The education of technicians should continue to prepare and develop them with the basic knowledge required to be an effective member of forestry organizations. However, in order for them to be better equipped to meet the needs of today's society the curricula must be adjusted to include subjects such as the fundamentals of social science and management principles of dealing with people. The importance is increased when it is further understood that the technician is the first of the forestry staff to come in contact with the public, therefore has the opportunity to influence first impressions.

16. The changing emphasis continues to advocate the integration of forestry and agriculture, including the introduction of agroforestry systems. Agroforestry is one of the important tools for meeting the basic needs of rural people for fuelwood, fodder and agricultural production.

17. Special education attention must be directed to ways of providing more income to rural people through appropriate forestry or forest-based processing activities. Besides the basic knowledge in forestry, the forester should be knowledgeable about community organization. The technical and professional training must stress the human aspects of forestry in order to meet the needs of people and to involve people directly in the activities beneficial to them. The syllabus for both technicians and professionals should be updated with subjects like:

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- Women and Children in Forestry: The history and education needs.
- Community Development and Settlement: Organization, who manages the community, land tenure and landless issues.
- Social Behavior and Economics: The relation between social and economic sciences.
- Management Principles: The process of management and management by objectives.
- Work Group Dynamics: Conflicts in management, group leadership and understanding how groups work.

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**Subsection D**

**THE USES OF SOCIAL SCIENCES IN THE TRAINING OF  
PROFESSIONAL SOCIAL FORESTERS**

**Source:** Burch, William R., Jr. 1988. "The Uses of Social Science in the Training of Professional Social Foresters." *Journal of World Forest Resource Management*, Vol. 3, No. 2:73-109.

**Note:** The following article provides information on some of the courses recommended to train social foresters. The list is not exhaustive. It is important to note that the special problems of various regions and countries requires modification of some details in order to meet specific challenges. Some of the crucial skills needed by a social forester are listed below.

"The social forester needs skills in: (a) social measurement that covers the full range of essential possibilities in social life; (b) an ability to group and display the data gained from these measures, and a way of connecting them to biophysical data; (c) an understanding of what and how to market cash products such as honey, mushrooms, baskets, etc.; (d) an overall interpretative framework for perceiving the functioning and processes of social structures and cultural values; (e) a means to create and to manage the various internal and external species of social organizations affecting humans and forests; and (f) an ability to listen, to interview, to organize, to give voice to, to persuade, to inform, and to direct the participants in social forestry projects."

## THE USES OF SOCIAL SCIENCE IN THE TRAINING OF PROFESSIONAL SOCIAL FORESTERS

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### Summary

In contrast to traditional forestry, which concentrates on the production of industrial wood, social forestry is primarily directed to community sustenance and improvement, and therefore requires the development of special skills on the part of those who practise it. Such skills are more concerned with human relationships than silvicultural manipulation or tree cultivation, and are often lacking in foresters trained according to conventional curricula. This paper identifies some important practical requirements in social forestry projects and relates these to key aspects of social science theory, methods and findings (i.e. assessment, tenure, institutional, community and innovation studies) which can improve project design and implementation and contribute to the development of social forestry as a discipline in its own right. The paper concludes with a suggested curriculum for a training programme for professional social foresters.

### INTRODUCTION

Forests throughout the world are under great stress, whether it is the conifer forests of Northern Europe threatened by acid rain, or the depletion of forests in Northern Luzon or Northern Thailand caused by commercial timber operators and agricultural expansion. At the same time, foresters and their professional practices are also under challenge. From bodies such as native American and conservation groups in the Douglas fir region of the Pacific Northwest opposed to timber cutting practices and silvicultural techniques, the Chipko Movement in Northern India challenging the displacement of native species by exotic species, and environmental groups opposed to the Forestry Commission's conifer plantations in the countryside of Britain.

These stresses represent both a challenge and an opportunity to the forestry profession. Forests and forestry have come out of the shadows and stand at the footlight of consciousness for large segments of the world's population and policy-makers. The challenge is to capitalize upon that new and fleeting attention to the social importance of forests and forestry. Many professional forestry training programmes are reconsidering the possible role of the non-economic social sciences in capturing the opportunities and meeting the direct challenges to the profession.

This paper will offer one basis for considering how the non-economic social sciences (hereafter simply the 'social sciences') can contribute to

the forestry enterprise and how they have contributed in the past. Economics is excluded because it has been such an integral part of forestry training and application for such a long time that it is established like silvics, soil science and other disciplines included in forestry programmes. We begin with an overview of how forestry and its professional application has always been a social activity, though both practitioners and social scientists have seldom acknowledged this. We then consider how the emergence of "social forestry" offers certain new variations on old forestry themes. This compels us to make an arbitrary distinction between "traditional" and "social" forestry to gain a better comparison and, therefore, better understanding of the different structures and functions required for forestry practices primarily directed to maximizing profits from a few commercial species, and those forestry practices primarily directed to community sustenance and improvement. So from attention to continuities and similarities we look toward the necessary differences that must occur if the challenges of the new environment for professional forestry are to be met.

After identifying the practical, social, technical and ethical reasons for establishing social forestry as a unique and somewhat independent professional practice, we then consider what the social sciences might contribute to its development. An incidental benefit of this exploration is that we learn of the real contributions that social science could also make to traditional forestry. The paper concludes by indicating the crucial curriculum elements of social science that must be considered in the effective training of professional social foresters.

#### SOME UNIVERSAL DOMAINS OF FORESTRY—A SOCIAL OVERVIEW

No human culture fully exploits all of the benefits, goods and services possible from a given forested ecosystem. Choices of what to exploit and what to avoid vary from culture to culture and from one historical period to another. In the practice of forestry, as in all other human resource activities, we develop policies about what needs to be done, and plan how to implement the policies; we assign the implementation of plans to organizations and persons; and we monitor, revise and evaluate as to how well we are doing or have done in carrying out plans and fulfilling goals. Another given is that there is a wide stream of sustainable and non-sustainable benefits potentially available from a forested ecosystem, some of these uses are complementary and others are conflicting, some uses have markets and others do not. Consequently, decision-makers and clients look to resource professionals to have certain technical and organizational skills to regulate the socially desired flow of benefits. The purpose of research is to improve and constantly adapt these skills.

Foresters intervene in ecological systems to increase the production,

on a sustainable basis, of those socially desired benefits (output of goods and services) and to decrease those outputs that are perceived as negative (floods, soil erosion, insect damage, fires). All professional forestry practices manipulate human uses and access to forest ecosystem benefits, so all forestry is social in terms of its rationale for practice, its venue of practice, and the socially approved incentives for practice.

Benefits of forests should not be seen only in the traditional view of economists who concentrate their measure of value upon willingness to pay and purchasing behavior, e.g. toothpaste is treated as a benefit and its prices measure the worth of the benefit. In full social reality a benefit is not obtaining a specific item or service, it is what a given consumer or collection of consumers perceive as a likely and desirable outcome—good health, prestige, sexual attractiveness, a good place in the hereafter and other equally important social outcomes.

As foresters we talk a great deal about wood and wood products, yet the general public simply looks at functions: a table of wood or one of steel or plastic is a means of setting things upon (however, at different times and in different cultures the prestige value varies greatly); a house of wood or concrete is still functioning as a shelter, heat from kerosene or charcoal is still functioning to warm the room; the sheltering of crops from wind can as easily come from a fence of thornbush or derelict materials like wrecked cars or used tires as from trees; erosion control can as easily come from grasses and shrubs as from a eucalyptus plantation. People don't think in terms of product sources but merely of how something benefits them. Foresters spend so much of their lives worrying about trees and forests that they think others share this view of the of the importance of trees and forests, yet it is much more important to look at benefits rather than objects. Interestingly, the general public often has a wider view of the benefits of forested ecosystems than professional resource managers. Foresters who are attempting to serve human populations will therefore need to discover the range of these wider and narrower views of the benefits from forest ecosystems.

While many forest benefits have a clear market price, others which are highly valued by human communities, such as clean air or water, may have no direct exchange value. Sacred groves are priceless and cannot be included in any balanced exchange system. Further, many of the benefits of forested ecosystems may be highly valued but have no monetary exchange value. Tobacco may be traded for fruits or nuts, a gift of firewood may obligate the recipient to provide certain favors at a later date, and a tree or forest animal may be removed to celebrate a significant event such as the marriage of a daughter or the birth of a child. No money changes hands in these exchanges but there are clear and well-known metrics of reciprocal value.

Indeed, the establishment of public forests and the desire by foresters to regulate forest practices on private land were a clear recognition that

forestry was socially too important to be left to economic markets alone. It was assumed that socialization of the forest resource would encourage the full range of benefits—priced and unpriced—to be given attention by society and its forest managers. In fact, the utilitarian goals of the US Forest Service in its early days reflected the clear values of a developing society. The emerging resource agency of a rapidly developing society argued: "all land is to be devoted to the most productive use for the permanent good of the whole people and not the temporary benefit of individuals or companies... where conflicting interests must be reconciled, the question will always be decided from the standpoint of the greatest good of the greatest number in the long run."

Throughout the period of early development of professional forestry in the USA, foresters sought answers to the following universal questions:

1. What are the means for increasing the production of desired benefits from forest ecosystems?
2. What are the means for suppressing certain internal and external threats to the forested ecosystem?
3. What are the means for balancing competing demands upon the forest?
4. What is the relation between certain forestry practices and the economic development and social stability of adjacent communities?
5. How can private, small-scale forest land owners be encouraged to adopt "sound" forest practices?
6. How can political challenges be adopted to serve forestry goals and policies?

Though the full and effective response to all of these questions would require systematic knowledge of social and cultural systems, the training of foresters has almost exclusively emphasized technical and biophysical solutions. In the 1930's the occasional elective in an introductory rural sociology course might be part of a U.S. forester's training, even though the 1930's were the height of social forestry practice in the U.S.. Indeed, the interest in forests serving people was of such a level that H.T. Gisborne, a forester working for the forest service in Montana, argued: "forestry has become one form of applied sociology. Foresters are actually *doing* something about it. Sociologists can't help, if they would, by defining the social objectives which they want foresters to achieve but not exceed" (Gisborne, 1943).

A few years later Gisborne had his wish and two sociologists did a study in his region (Kaufman and Kaufman, 1946), looking in detail at two forest-dependent towns in Western Montana. Among a variety of findings they reported: "from the standpoint of the community members interviewed, the basic issue with respect to forest policy is not so much one of technical forestry, as one of social control and economic reward. The central question is not rapid liquidation of the forest resource versus sustained production, but rather concerns the problem of protecting the

public interest and distributing equitably the rewards from the forest" (Kaufman and Kaufman, 1946).

However, these points and most of the findings of the study were either rejected or ignored by the Forest Service. The foresters' use of social science focused on how to stop people setting forest fires, and using information from other studies to direct people towards accepting the *a priori* notions of the foresters. There was little serious use of social science until the recreational crisis in the late 1950s and early 1960s. Yet, by that time, the public had decided its participation in deciding that the "greatest good for the greatest number, in the long run" was no longer available to their control. By the late 1960s and early 1970s, the USA had enacted legislation (the Wilderness Bill, Resources Planning Act, National Environmental Policy Act) that greatly curtailed the latitude of action by foresters, and greatly increased the participation of the public in those decisions. These trends suggest that what is good enough for rich societies is good enough for poorer societies, so greater participation by affected members of the public in forestry decisions will mean, if not better forestry, at least a forestry more sensitive to the client's perceived desires.

Given the changed social environment, one would expect that programmes of forest training would attempt to combine skills in understanding biophysical systems with an equivalent understanding of socio-economic systems. However, these ideals have seldom been attempted because of limited contributions by social scientists and limited exposure by foresters to such possibilities. Consequently, though public values and interests have dramatically changed, most forestry training programmes in the industrial countries have made only minor adjustments in their curricula. A few programs have added some social scientists specializing in outdoor recreation, but only two have created a substantial social science faculty and curriculum giving direct attention to major forestry issues. Certainly, only one or two US forestry programmes approach the ambitious level of the existing social forestry program at the University of the Philippines, Los Banos, or the Regional Community Forestry Training Centre at Kasetsart in Thailand.

Social forestry might best be seen as an evolutionary offshoot from its forestry roots. Yet, as when hominids branched from the other primates, social forestry shares many similarities with its traditional forestry source. The social forester intervenes in ecosystem processes to encourage gains in socially desired outputs. The social forester must break from fascination with trees to considering how to fulfill functional needs. The social forester shares the same universal questions of production, protection, distribution and management control, but many of the constraints of traditional forestry, such as people's desires and knowledge regarding forest uses, become opportunities, and many of traditional forestry's opportunities, such as clear technical goals and

means, become constraints. However, both share a confusion as to how they can best incorporate the non-economic social sciences to improve the effectiveness and efficiency in the delivery of forestry programmes.

The next section will explore how the emerging field of social forestry is both older and newer than its proponents may assume. In this discussion we will see how social forestry is both parent and child to traditional forestry, and may be the best hope for overcoming public scepticism regarding the fit between the rhetoric of foresters and what they actually practise!

#### THE EMERGENCE AND APPLICATION OF SOCIAL FORESTRY—A SOCIAL AND CULTURAL OVERVIEW

Social forestry may seem the latest invention of concerned international conservationists. Yet the very viewing of it as something new both distorts historical reality and ensures that, in the long run, the hope of social forestry may prove as ineffective as other distortions of historical reality. All human communities have an awareness of the essential connection between tree cutting and the attendant soil loss if regeneration fails to occur, but whenever the cycles of cutting have exceeded the cycles of regeneration, there have been perfectly predictable social forces at work.

In classic times, deforestation followed the absorption or displacement of rural and hunter-gatherer communities by urban centers in the Tigris, Euphrates, Indus, Yellow and Nile river valleys. It seems likely that the excessive cutting of timber in the upstream rural areas contributed to the erosion of the urban resource base, and ultimately, the decline of the social and cultural base of these hydraulic civilizations. Similarly, the emergence of fourteenth century forestry in France, Germany and the Netherlands was a response to excessive cutting induced by urban growth (Glacken, 1967).

In the United States in the middle 1800s, and in the 1900s, timber famines, forest degradation and soil erosion led to forms of social forestry. People in the urban centers sent money, unemployed workers and resource professionals to restore certain rural practices—shelterbelts, farm woodlots, planting on eroded hills and gullies, tourist facilities, check dams and the taking of marginal lands out of agriculture and putting them back into forests. In these periods there were strong demands by foresters to use the power of the state to give them the legal authority to regulate certain timber practices on private forest lands. Further, there were the more successful pressures to purchase marginal lands and thereby include them in public forests to be managed by professional foresters.

These forest conservation activities were greatly aided by the fact that coal, petroleum, high-rise housing and new materials technology all provided the means to escape timber famines, and to make politically feasible strong forest conservation practices. Desired social benefits that were once met only from the forest ecosystem were now being met by other systems. People still built homes, still heated them and cooked food, but wood had become a minor element in meeting such benefits. Hence conservation of forests became possible at the very time that forests were becoming minor elements in the political economy. A final irony is that substantial portions of the lands purchased for inclusion in state forests to ensure a continuous supply of wood fiber find their highest use value for aesthetic, recreation and tourist purposes rather than as sources of timber.

It would appear that for the present developing countries there may not be such a happy history for forest conservation. Yet it is important to remember the fortuitous factors that have made forest conservation effective in North America and Western Europe. These former developing regions are not likely to serve as useful models of social forestry success on their own. Indeed, the spectre of growing populations residing upon fixed land bases and without industrial-urban occupational opportunities means that social forestry may likely become a permanent, rather than short-term strategy whose long-term deficiencies will not be resolved by external social and economic factors as happened in the industrial countries. When social forestry is seen as the permanent and only subsistence strategy, then it will begin to assume as diverse a range of practices as does traditional forestry. It is therefore crucial that we do not let the training and practice of social forestry assume a fixed and monolithic posture, but allow it to remain highly adaptable. Those practices that might work in alpine areas are unlikely to work in lowland marsh areas; practices apt for tribal communities are unsuited to peasant communities; and those that fit Moslem villages will be inappropriate to Hindu or Buddhist villages.

The range of strategies that have been proposed to develop forest ecosystems for the benefit of local communities and the whole nation seems extensive and to be growing at a rate equal to some projections of deforestation rates. Among the many strategies, the following are common: agroforestry practices which combine food crops and livestock in various ways; community fuelwood production, which plants rapid growing species on communal lands in order to meet domestic cooking and space heating needs; small scale commercial timber and pulp operations, which are not unlike programmes in the northeastern United States that seek to have many small landholdings producing wood fibre; small-scale, nature-based tourism that seeks to provide facilities for urban folk to enjoy nature with local enterprises furnishing services rather than an urban centered chain; shelterbelt and watershed systems

to conserve moisture and irrigation systems. This list could be greatly expanded as we examine the needs of micro systems or new opportunities such as the large scale commercial mangrove plantations being developed on the new deltaic islands of the Ganges in Bangladesh.

Each of these social forestry systems require specialized training. Further, since these activities have not been part of traditional agriculture or forestry programmes, there is a very limited base of research knowledge upon which to build sound professional systems of inventory, assessment, diagnosis, monitoring, prescription and evaluation. Hence participation by client populations is crucial, as they are most likely to have the long-term working knowledge to carry out the social forestry programme that the professionals can best adopt and systemize as their learning progresses (Brukensha et al. 1983; Hoskins, 1983; Rambo, 1984).

One thing that seems certain in the social forestry area is that it is directed to local interests and is relatively smaller in scale than most commercial operations. However, there is much of social forestry that has commercial relevance, and there seems a real possibility that some activities begun as small-scale operations might find a market and move more directly into large-scale commercial operations. On the other hand, many commercially driven projects may find greater flexibility and sustainability at the smaller scale of social forestry.

Indeed, a review of the literature suggests that though stopping erosion and deforestation are important goals, they are equal to, or subordinate to the most common and consistent description of social forestry projects as being directed to equity in the distribution of benefits and burdens and a desire to reach those poorer areas and social groups that are seldom reached by other development approaches. The criteria of equity would seem at first glance to rule out many of the most touted social forestry successes such as the eucalyptus plantations growing on former cotton farms in India. As Guha (1985) argues, the social is often left out of social forestry projects: "they have emphasized plantations on private land... (rather than communal land)... they have favoured exotics like Eucalyptus which are commercially valued and which hardly fulfill 'basic' needs of fuel, fodder and fibre." Shiva et al (1982) argue that social forestry projects have meant the loss of land for food production and the loss of employment, in some cases as much as 250 man-days per year. As they note: "the losers will be precisely those whom the project is intended to benefit most" (Shiva et al, 1982).

The effective participation of the rural poor and landless in social forestry programmes is something that has been much talked about, but seldom approached in actual development efforts. The middle class, and therefore more receptive farmers, have been a more satisfying target because they talk and think like the professional forester. Consequently, social forestry that actually gains the participation of the rural poor in design, action and benefit distribution will need to build its own, and very

unique, learning curve. In the remainder of this paper I will suggest that: (1) successful social forestry projects will require a new kind of professional; and (2) there is a substantial base of social science theory, methods and findings to aid in the development of this new profession.

Social foresters will intervene in social systems as often as they will intervene in the ecosystem. This is particularly so as they move from introducing pure, physical technologies toward attempting to introduce new values such as planning for a long term future or developing a 'work ethic'. It seems a simple matter to provide rural villages with technologies such as tree species that grow rapidly, harvesting techniques that save labour, stoves that use less fuel. Yet each of these technologies can greatly impact long-held tastes, social relations and sensitive cultural values.

For example, the idea of a plantation is a comfortable one for foresters, but to many villagers in Latin America it has extremely negative connotations. Often a new tree species may too loudly announce the dependence upon outsiders—the foreign trees all in an unnatural row, with an 'unpleasant' smell and a 'dirty' feeling of the bark gains a reaction not unlike the British who see 'foreign' conifers crowding out solid 'native' oaks. So the social forester is asking for changes in taste from groups whose primary means of survival has been to hold onto what traditionally has worked. That is, stability of survival is equated with stability in traditional standards of taste. Further effective social forestry projects will require changes in land tenure rules and there will be constraints and changes regarding wood gathering rules about which gender and age groups should have the "right" to gather, from which trees or parts of trees, for which functions (Fortmann and Rochelau, 1985).

The point of this discussion is to suggest that the social web has its fragile interconnections that are not unlike the complex web that holds together the forest ecosystem we are attempting to protect and/or restore. Yet the social web is no more confusing, complex or unpredictable than the biophysical web and only unwillingness to apply the extant social knowledge remains the mystery.

People are generally very receptive to technologies that improve traditional practices—a horse is better than walking, a rifle better than bow and arrow, a snowmobile better than a dogsled. However, much social forestry is short on such easily fitting technologies and often depends on effecting critical changes in cultural taste, social rules and practices, different ways of organizing work and leisure, new schemes for planting, harvesting and sustaining the commons. The forester as an agent of major social change is not a common image nor, probably, a desired one. Yet this is both a cause and consequences of a social forestry programme whose actions match its rhetoric. The next section will outline some steps toward gaining sustainable programmes in social forestry.

Social forestry is therefore not something new but an ancient, continuing and recurring practice that emerges and becomes systematized whenever urban elites perceive threats to values they cherish. It includes a diverse and growing complex of practices and strategies for which little biophysical research knowledge exists. The most 'successful' social forestry projects have been those that did not accomplish the goals of equity and communal benefit. Social forestry projects that are effective in accomplishing the goals of equity and communal benefit will give more attention to the causes and consequences of social intervention than they do to pure biophysical interventions. Finally, effective social forestry creates major social changes.

#### TOWARD PROFESSIONAL REORIENTATION—A COMPARISON OF TRADITIONAL AND SOCIAL FORESTRY PRACTICES AND NEEDS

One of the unique properties of social forestry is that its practice is not solely directed to specific tree species, silvic systems, or other aspects of large scale forestry systems, but rather to the total perceived and potential stream of social goods, services and benefits available from intervention in forested ecosystems. The social forester does not look at trees nor at people, but rather at how to facilitate a string of complex connections between: (a) desired and perceived benefits; (b) the capability of the ecosystem; and (c) access to the institutional means for accomplishing the task. Effective social forestry means an entirely new perspective on the range of benefits from forest ecosystem manipulation, the role of the professional and the contribution of key persons in the beneficiary population and urban elite populations. This does not mean that the traditional forestry training and practice geared to maximizing biomass production for commercial output is no longer necessary. Rather that "dressing up" traditional forestry by calling it social will not make it work in other contexts. We shall need more traditional forestry in traditional locales, but for areas where such practices are inappropriate an entirely different kind of professional will be required.

There seems to be enough systematic data and expert testimony on the ineffectiveness of traditional forestry to deal with the needs of large numbers of the rural population (Vidyarthi, 1984; Kartawinata and Vayda, 1984; Dove 1985; Westoby, 1973; Eckholm, 1979; Chowdhry, 1983 are a few illustrative examples). Certainly it seems curious to expect that a new name, the addition of a few jaw-breaking social science terms, and trading in the gun, uniform and hudge for jeans and sandals will transform the traditional forester into a bright new saviour of the people and their forests. Here, we clearly have a case where we should let those who do what they do best continue doing it, whilst we develop the new sets

of knowledge, organization and training that can meet very different needs, challenges and environments.

The notion here is something different from the "bureaucratic reorientation" effectively argued for by Korten (1980), and Korten (1981). The suggestion is more directed to reorientation of the profession so that social forestry develops separate pathways of action and education, while traditional forestry programmes continue with plantation and commercial forestry and other traditional activities. Further, it seems essential to not simply reform traditional forestry agencies, but to create a new agency whose values, incentives and career paths match the needs of the unique social forestry requirements for its own specialized output measures, planning procedures and directed social and ecological changes.

Ganapin's (1982) experience in social forestry in the uplands of the Philippines led him to believe that: "social forestry as a holistic approach becomes social forestry as a subversive action... (because)... it seems to change the status quo, the existing condition of limited perspectives, shortsightedness, and inequality... where before, forestry education mostly concentrated on the sciences and technology of dealing with the affects and symptoms of forestry problems, it must now develop socially conscious and politically active foresters."

He concludes with five lessons learned from working in upland areas. The first two of these are that foresters must have a strong commitment to service, rather than to their personal careers; social forestry must encourage process-oriented rather than output-oriented activities. He notes: "an activity like the planting of fruit trees can quickly be done—if the sole concern is output. Tell the cooperators that they have to plant so many numbers of seedlings; or else, give them the seedlings, transport them en masse to the site, and bring them back only when they have done the job. A day is enough for this. A process-oriented fruit tree planting, however, will never do it this way. Besides giving respect and asking for the people's decision first, a process-oriented strategy considers the series of necessary activities that lead into actual tree plantings and follow-up maintenance activities" He demonstrates how each phase of planting, maintenance and protection involves understanding by the cooperator group, as well as the active responsibility of particular individuals for certain specific tasks.

Veneracion (1982), writing on a similar theme, argues that the widely acclaimed PICOP program in the Philippines may be social forestry, but it still is a large corporation versus the small farmer. He notes: "Whether the farmer associations in the PICOP agroforest indeed function according to democratic and participatory principles is another issue worth looking into. The mere fact that it is a company employee who helps in the dispensation of the loans of the DBP and the World Bank (through the local Rural Banks) already creates the aura of economic and political influence, the mechanism of control over the farmer's view of his



day-to-day struggle for survival. The monoculture of *Albizia falcataria*, or any other crop, for that matter, not only encourages, but in fact, ensures political control since the farmer is left with no choice but to deliver his goods at predetermined and contracted prices."

Ganapin (1982) makes a similar political point, though from the perspective of the professional social forester. His third lesson is that social forestry should be people-based, rather than agency-based. He notes that when conflicts occur between agencies and communities, "social foresters should take the side of the people. If they do, they will most likely be considered subversives or traitors to the agency that employs them... (further, a people-based approach may be alien to the local people)... experienced development workers will attest to the difficulty of making people—who have considered their poverty as normal and who wait upon fate, the hand of God, or a super hero for their upliftment—realize that their development lies within themselves, in their unity and self-reliance. Even professionals find the concept difficult to comprehend, much more to implement" (Ganapin, 1982). The social forester not only must contend with the political struggle between the employing agency and the target community, whilst raising the political consciousness of the target population, but Ganapin's fourth lesson is that the professional must encourage unity between frequently warring scientific disciplines and resource agencies. His fifth and concluding point is the need for a nationalistic response if the correct distribution of sacrifice and determination are to create successful social forestry projects. That is people, communities and agencies must feel they are serving a larger entity than themselves.

Both observers, one a forester, the other a historian, treat social forestry more as a form of political action than the simple implementation of technical factors. Still, it is difficult to see how a "subversive" and "radical" activity that raises the consciousness of the poor to attack the institutions and agencies that pay the professional and make the loans to the now radicalized villagers is a very likely event. Nor are there many professionals who can sustain a challenge to their own organization when its goals, rules and practices conflict with local desires, or bring together long-conflicting disciplines and agencies in a sense of nationalistic self-sacrifice—and still remain on the payroll. Indeed, the most likely way such generally recognized changes can occur is with the creation of new kinds of professions and agencies with different missions that can compete with the older institutional patterns. The reward structure of the social forester must be so structured that it fits within the necessity of change and challenge to established patterns. Output is measured by criteria very different from the cost-benefit measures of traditional agencies, and personal advancement is gained by faith in the "radical" vision of the new agency. Such a pattern is not unlike the agency Gifford Pinchot created in the United States, where very

revolutionary ideas were carried out by the very young and idealistic members of a very new profession operating in a highly decentralized agency newly taken from its traditional bureaucratic home.

Heaver (1982) provides a convincing argument as to why there is the need to consider these realities of bureaucratic politics in the management of rural development projects. He notes how economic growth does not necessarily aid the rural poor and may well be detrimental to them. This is because: "the poor can be neatly defined in economists' statistical tables as some homogeneous lower fractile of the population in income per head terms, but in the rural area the poor live next to, are tenants of, owe money to and work for the relatively prosperous larger landholder. Leakage of benefits to non-target groups in these circumstances is inevitable." In other words, the political realities are such that not only does "trickle down" not work, but even when the poor are targeted we get something of a "bubble-up" of benefits. Heaver (1982), Veneracion (1982) and Ganapin (1982) argue that if we are to have projects that reach the target populations of the poor and the landless, we must recognize and operate within the political realities of a given political and organizational system.

Heaver (1982) suggests that the World Bank's strategy in the 1970s of politically feasible "operations at the margin are likely to be turned to the advantage of local vested interests where land distribution is skewed and where local elites are powerful. In the majority of rural projects, land distribution is skewed and local elites, in the shape of local members of state or national legislatures, party officials, village leaders, mayors, landowners, businessmen, merchants, etc., are powerful."

Hartmann and Boyce (1983), who did a detailed field study in a village in Bangladesh, found that even "appropriate technology" which is, most often, what social forestry is all about, cannot bypass the established village class system. They report "even the inexpensive, small-scale MOSTI (manually operated shallow tubewells for irrigation) wells cannot completely bypass the social obstacles which block aid to the poor. The extra yields from MOSTI irrigation are still reaped in proportion to the amount of land a person owns... 'Appropriate technology', suited to Bangladesh's present conditions, is undoubtedly preferable to inappropriate technology but, in the final analysis, there can be no simple technical answer to problems rooted in an inequitable social order." Later they note the substantial upward flow of much foreign aid. They argue that aid lubricates, "the vast rural patronage machine which links the government in Dhaka to the rural elite. This helps to explain why the real income of the top 5% of households in rural Bangladesh rose by 24% between 1963-64 and 1976-77, while that of the bottom 85% declined by 33%" (Hartmann and Boyce, 1983).

The "bubble-up" effects of many rural development efforts are not missed by the rural clients of social forestry projects. Ted MacDonald

(1982) suggests that social forestry programmes for Indians and Campesinos in the highlands of South America will most logically be located on lands unsuited for agriculture. However, "communities may hesitate to become involved in any activity which visibly increases the value of land previously viewed as 'worthless' by those elements of the national society who have previously usurped much of the valuable arable lower regions. Improvement, therefore, could be seen as an invitation for usurpation". This is particularly so as, "for 450 years, social elites have become established largely by exploiting the labor and seizing the land of Campesinos and Indians. Indians and Campesinos are acutely aware of this. And they are suspicious of any programme designed by those elements of the identified as part of the ruling elite."

This fact makes it all the more difficult for the social forester to be the agent of radical change desired by Ganapin, because the social forester, by virtue of educational attainment and income, is likely to be more closely linked to the village and urban elites than to the language, values and experiences of the landless and rural poor. The social forester shares the dilemma of the concerned social worker who must, even though originally coming from the classes he or she tries to help, earn the trust of clients at the same time as reassuring the elites that all their privileges of property will not be upset.

Heaver (1982) outlines eight strategies for donor groups to follow if they really wish to create the necessary political changes so that the poor actually do receive the benefits directed to them. Though one doubts there will be any massive stampede of donor groups to follow his advice on developing a direct political challenge to host-country institutions, he does provide additional evidence that a social forestry that simply adds a modifier to traditional forestry will end as do many other development promises in completely missing, if not directly harming, the target beneficiaries.

Participation by the target population in social forestry projects is greatly favoured by both traditional foresters and their challengers from the left. However, the meaning of participation, as the discussion above demonstrates, varies a great deal. Sometimes participation seems the equivalent of the handpicked advisory board and ritualistic public hearings favored by forestry departments in industrialised countries because it permits them to do what they intended to do in the first place. At other times it has the feel of a consensus of equals all talking and making intelligent choices and then marching off to fulfill their destinies in ways not unlike some of the poetic hopes in the 1930s and 1960s about poor workers and farmers throwing out their oppressors and cooperatively helping each other to succeed. To design and implement social forestry projects that truly raise the living of the rural poor will require some radical social change, but the change agent is unlikely to find a great deal of help from the poor themselves, for all of the institutional

reasons we have noted.

There is a need for the social forester to establish an authority that is seen as legitimate to both the client group and the elite groups. This assumes skill in not simply following what villagers think they need from the forest, but helping them to translate those perceived needs into realistic opportunities. Thus, few people get to gratify their fondest desires, though all should have the opportunity to assess the various desires, the various means of accomplishing these, and what the likely consequences are of choosing the 'y' solution over the 'x' solution, and of choosing desire 'p' over desire 'a'.

In short, the social forester must create a legitimate authority, accepted by the client group and members in the power structure. Part of the legitimacy among the poor comes from helping them to make realistic assessments of the constraints within which their aspirations must operate, identifying the goals, means, hopes and likely consequences of any and all of their achievements. The social forester is a source of information about and access to the necessary sources of credit, operational skills, legally mandated rights and opportunities, markets and generally how to 'fight city hall'. In this way the authority of the social forester gains its legitimacy from effectiveness and efficiency in helping people to develop hopes, and to match those hopes to political reality and ecological possibility, yet the actions maintain legitimacy with elites because it is done within the rules of the established system. The social forester gives a voice to the poor in an accent and style that can be heard and understood by elites.

Jedlicka (1981) furnishes an interesting example as to how such a social forestry program might work. He discusses a participative approach used in Puebla, Mexico that had an immediate payoff:

"In this transfer organization, administrative staff as well as extension workers were recruited specifically for their ability to involve clients in planning and decision-making. Staff were trained in human relations and group dynamics training at the National School of Agriculture. The writer often observed peasant farmer groups marching into the central office in Puebla to hash out their grievances with middle management. The skill with which that conflict was handled was above average. In the Puebla Project, problems were met by designing a structure that could control problems in the transfer process as they arose."

The "participative, two-way communicator" favored by Jedlicka, is a substantially different kind of professional than the graduate of the usual forestry training programme. His report, and those of the other studies we have examined, provide sharp contrasts between the goals, motives, organizational patterns, functions and activities of the traditional and the social forester. The following pages will clarify this comparison and permit us to identify the necessary continuity and divergence in the

course work, academic subjects and training programs of the two distinct professional practices.

TABLE I

Comparison of the Functions of Traditional and Social Foresters:

1. Management:

*Traditional Forester* manages large contiguous landscapes to maximize biomass production for economic profit. Ensures that part of profit surplus is retained to invest in sustaining productive process.

*Social Forester* manages information about the structure and function of forested ecosystems, species characteristics, seed supplies, costs and potential benefits of various intervention strategies.

2. Planning:

*Traditional Forester* develops detailed plans as to working circle plantings, cutting regimes, desired species, rotation schedules, and so forth.

*Social Forester* maps connections between resource capability, infrastructure capacity, institutional constraints and opportunities, and market trends or client populations' desired benefits.

3. Implementation:

*Traditional Forester* supervises a large workforce of technicians, loggers, planters, insect and disease controllers, fire suppression aides, road engineers and others. Means of control are economic incentives and bureaucratic authority.

*Social Forester* facilitates connections between individual, household or community desired benefits and institutional, infrastructural and ecological means of accomplishment. Means of control are persuasion and demonstration.

4. Monitoring:

*Traditional Forester* has standardized indicators of how well cutting schedules, planting schedules and profit making are proceeding, and who is responsible for success and failure in accomplishment of these predetermined goals.

*Social Forester* is in a permanent state of learning and adjustment from the unexpected and unplanned. Certain traditional values or techniques or some accidentally discovered techniques may be most effective in planting or distribution success. As the distance between practice and practitioner is short, the regular adjustments need not impact an entire bureaucratic system.

5. Evaluation:

*Traditional Forester* will examine how well the costs of production are balanced with the rates of return, what investment strategies will be needed to minimize future costs and to maximize future returns. The numbers of hectares replanted and the comparative efficiency of various planting strategies will be examined.

*Social Forester* will examine how well the client population is able to increase desired benefit gain without recourse to the professional's actual intervention. Other questions will consider whether the distribution of benefits have reached the target populations and what factors affected the accomplishment or failure in that distribution. Further, there will be considerable attention as to whether the capability and sustainability of the ecosystem has been improved, or if prior patterns of degradation have been arrested or slowed.

Table 1 contrasts the functions of traditional forestry and social forestry. The point of this comparison is not to demonstrate the superiority of one forestry practice over another. Rather, it is to recognize that any enduring political economy will require some variant of both practices to meet ongoing national needs. Yet it is essential to realize that professional functions, practices, behavior and rewards are very different. There is no possibility for a simple transfer of technologies and skills from one area to the other, though coordination and mutual learning seem essential.

Social forestry programmes therefore involve more than letting the population do whatever it wishes. Rather, they assume a clear and essential role for the outside professional. As a broker and facilitator of information, the social forester needs to know the sources, nature, types and distribution of the various producers and consumers of resources information. Further, the social forester will be an essential catalyst in making community and household participation actually happen. Consequently, there is a real need for persons who can integrate and direct information from both biophysical and social sciences. The next section will outline some ways in which key social science ideas may be applied to social forestry training and action.

APPLYING SOCIAL SCIENCE THEORY, METHODS AND FINDINGS TO SOCIAL FORESTRY—SOME ILLUSTRATIONS OF POSSIBILITY.

The intellectual antecedents of social forestry are neither new, nor untried. Indeed, there is a substantial literature on these very topics, though often it may not come nicely labeled, "social/community forestry". Rather, the labels may be: community studies, innovation studies, time budget studies, survey studies, social indicator studies, regional studies (Burch and DeLuca, 1984). The need is to get these

applied findings synthesized and reshaped to aid social forestry applications. As Hoskins (1982) notes regarding available field experience: "it is time to take the tools and project successes which we have developed, to see in what way they may be used or modified to improve our future social forestry programming."

### Theoretical Perspectives

Perhaps the most useful contribution the social sciences can make to social forestry is a theoretical perspective. The struggle by various social sciences to develop integrative models that combine man and nature as part of the same system may be the most helpful. Because with such a perspective the resource professional can begin to see how certain silvicultural treatments may affect certain distributional or socially sustainable factors in the dependent human community.

At the present time, these models are associated with particular individuals or "schools" within particular disciplines. However, they usually have more in common with one another than with other exploratory models within the particular discipline. The following gives an overview or set of snapshots of the social science potential. It is also important to note that social scientists have had a long and extensive interest in natural resource and forestry issues.

One of the earliest writers with a holistic viewpoint was Radhakamal Mukerjee, whose *Regional Sociology* (1938) argued that: "Cooperation in the conservation of land; in the use of water, in forest management, in the training and management of rivers, and finally, in the reciprocal relations of village and city must be the keynote of the future". In 1963, his *The Dimension of Human Evolution* continued to argue that stable societies require stable, well-managed resource systems. Sorokin and Zimmerman (1929) in the 1930s were two other sociologists who saw biophysical factors as essential elements in any explanation of human social structure.

Rural sociology has had a large number of integrative resource-society models. An early example is the work by Harold Kaufmann, whose early studies on forestry and community stability (1939, 1946) and his "Sociology of Forestry" (1953) treated ecosystem stability and instability as part of the larger cultural processes—the forest political economy cannot be set apart—but remains an aspect of the larger whole.

In the 1950s and 1960s Cottrell's (1955) studies on energy and Firey's *Man, Mind and Land* (1960) fully incorporated natural forces as central variables for understanding change and stability in human society. In the 1970s and 1980s work by Otis Dudley Duncan (1964), Catton and Dunlap (1978), Burch (1971), Lee (1975), Kellert (1982), Fortmann (1985), West (1982), Gale (1986), Morrison (1980), Wolf (1986), Van den Bergh

(1975), Schnaiberg (1980), Humphrey and Buttel (1982), and others have greatly refined the conceptual models of society-nature transactions.

Political science has given most attention to policy and organizational issues. Sally Kirk Fairfax (1980) has examined the sources of institutional myopia and given solid comparisons of resource agency structure and function. Herbert Kaufman (1960) examined the forest ranger. Ansley Schiff (1962) identified the future of forest science and culture. Culhane (1981) compared and contrasted old and new US agencies, and Norman Wengert (1976) has been examining the environment of politics and the politics of environment since the 1950s.

Geography, also, has numerous examples of good models, but an outstanding example is Clarence Glacken's (1967) *Traces on a Rhodian Shore*. He gives a masterful study of how forest and other environmental and resource practices do not really emerge until the resource is nearly gone—or is no longer a central aspect of the normative order. He examines the origins of European ideas of conservation from the 12th through the 18th centuries.

The psychologist Irwin Altman (1975) has provided a distillation of empirical studies on how individuals use, respond to and are controlled by their environment. His work does not have the historical depth of Lewis Mumford's (1967) studies on man and the environment, but it clearly connects natural ecosystem degradation with social ecosystem degradation and the impact on the individual's sense of well-being. Zube and his colleagues (1982) have done similar work on landscape perception, joining individual, social system and ecosystem as equally balancing elements. Barker's (1968) ecological psychology studies pioneered techniques of social observation.

The historian Samuel Hayes (1959) did a series of studies in the 1960s that provided insight on how the "cult of foresters' efficiency" created a trained incapacity that had them see forests when others saw only trees. His insights remain universal cautions and guides as to how the heat of source intentions can have unintended social consequences. Fernand Braudel's (1966) study of the Mediterranean world, Lewis Mumford's *Techniques and Civilization* (1963), and Bill Cronon's (1983) recent study of New England land use practices, all represent the historian's vision of linking man and nature in a time-space context. Donald Worster (1979) consistently documents the political origins and consequences of the prescriptions made by ecological scientists.

A variety of anthropologists have made significant contributions to our understanding of the holistic interdependence of human and natural ecosystems. Perhaps one of the most systematic attempts to combine biophysical and socio-cultural variables in a mode for rural development is in the recent work of Terry Rambo (1984). Michael Dove is another anthropologist whose work is directly relevant to social forestry. He examines traditional systems of social forestry "that have been in

existence for millenia" (Dove, 1985), whilst the anthropologist George Luvell (1984) provides a useful example of a human ecology model for community and social forestry programmes.

The point of this brief overview is to demonstrate that: (a) each of the social sciences has a unique angle of vision for analyzing people—forest interactions; (b) there has been a substantial amount of intellectual activity and accomplishment in identifying the forces that affect the nature and outcome of these interactions; (c) the social sciences have been considering resource issues for a very long time; (d) significant models for planning and designing social forestry projects already exist; (e) the design of training programmes and curricula for social foresters will need to incorporate these several facets of thought, rather than simply picking one particular, favoured discipline.

### Findings

Social forestry does not suffer from limitations in useful and available social science findings. The failure to use such data in the planning and implementing of social forestry projects is a failure of will, rather than a failure of social science. Thompson and Warburton, for example, looked at thousands of numbers to express physical facts in the Himalayas, yet they found them less useful than social facts: "It is only a slight exaggeration to say that it is our considered conclusion that there is at present only one number that has any scientific validity at all, that is the number 67—the factor by which all the expert estimates of the per capita rate of fuelwood consumption vary . . . but one of the perhaps surprising conclusions that emerges from it (their complex analysis) is that whilst it is extraordinarily difficult to come up with any useful and valid physical facts, it is quite easy to come up with useful and valid institutional facts" (Thompson and Warburton, 1985).

Of course this does not mean that we have enough valid and reliable social data, or that we do not need to improve our biophysical measures. What it does mean is that we cannot blame lack of social information, but rather our failure to act upon its implications. Indeed, the recent volume by Michael Cernea (1985) demonstrates a substantial range of studies and findings on rural development. Further, social scientists have collected a great deal of information on social forestry alone which could be used to help improve project design and implementation. We will discuss five such areas in a fairly broad sense—assessment studies, tenure studies, institutional studies, community studies and innovation studies. Two of these—community studies and adoption studies—will be used to suggest how a much wider, available and relevant social science literature could be applied in social forestry programmes.

### Assessment Studies

Romm (1980) identifies thirteen ways in which the benefits and costs of social forestry can be measured. Further, he identifies how these measures can be assigned to project level, separate village and forest department levels, and by the different groups within the village. Barnes et al (1982) and Allen and Barnes (1985) provide a cross-country and cross-project comparison of benefits and costs or ways to systematically evaluate the accomplishment of the projects.

Benefit/cost measures are not the only established means of assessing, monitoring and evaluating social forestry projects. Perrett et al (1980) provide examples of a wide range of behavioral science methods to use in project assessment. Their discussion and case studies cover a range of uses from assessment and diagnosis, through pre-feasibility study, feasibility analysis, appraisal, impact prediction, design and impact measurement. Noronha (1982) provides a variety of assessment uses of social science, and Noronha and Spears (1985) examine the variables affecting social forestry projects. Fortmann and Thomson (1984) identify a wide range of common problems in social forestry design and implementation, and suggest specific social science techniques to deal with the problems. Chambers (1983, 1985) outlines techniques for RRA (rapid rural appraisal) to assess impacts of projects. A wide range of scholars, disciplines and techniques provide guidance for assessment (e.g. Huduwaki, 1982; Gregerson, et al, 1987; Murray, 1981; Skutsch, 1983; Tucker, 1984).

### Tenure Studies

Perhaps the most substantial tools relate to "tenure" issues. The institutions of property rights have been a central interest of all social sciences, from economics and political science through anthropology and history. Consequently, theory and methods for examining the influence of tenure upon success of social forestry programmes and the techniques for dealing with tenure are well known. Cernea (1981) did an excellent case study on how tenure behavior can greatly differ from formal norms and the reasons why. His recent analysis (Cernea, 1985) broadens our understanding of the influence of tenure upon social forestry projects. Fortmann (1985) clearly identifies the influence of tree tenure norms upon agroforestry project success, and provides the means to include her insights into project design. Noronha and Lethem (1982) offer an excellent overview of the social anthropology literature on traditional tenure and land use systems, and clearly tell the reader how to incorporate such information into project design. Bruce, Fortmann and

Riddell (1984) provide the most comprehensive overview of tenure factors and this is essential reading for the social forestry student.

### Institutional Studies

The social science literature contains a number of different approaches to studying motives as they might influence social forestry projects. For example, there are methods for gaining great depth of understanding about the motivation of individuals, but such depth is often as unnecessary as it is time-consuming. Salient levels of social forestry participation are more likely to be collective, i.e. village, tribe, clan or household, and consequently, the motives are to be found in the social structure itself. That is, the system of differential distribution of wealth, power, prestige or information serves as a system of motivation. Households or communities that have wealth, power, status or specialized information tend to strive to hold onto it, and those without it tend to strive to attain it unless they have been so long and hopelessly without it that they remain within a fatalistic attitude.

Institutionalized structures serve to direct behavior, in spite of a desire to do the opposite. As Thompson and Warburton (1985) note: "tragedy is not intrinsic to the commons but, rather, results from a lack of appropriate institutional support." This is born out by Ashby's (1985) study in Columbia, where she found "small farms located on steep-sloped land highly susceptible to soil erosion adapt to environmental processes of soil fertility decline with cultural practices that provide them with income in the short run, but which exacerbate the long-run process of soil erosion. In this case, small farmers have responded to a market structure and a political and institutional environment which creates incentives for them to expand cassava production,...." In short, like the farmers studied in Nepal, the institutional structures of property rights, market forces etc. direct a behavior for which there are no technical solutions, only social solutions.

Indeed, the use of knowledge on the structure, function and evolution of social institutions and their effect upon forestry projects may be one of the most detailed sets of 'how to do it' social science knowledge. Blair and Ojpadwala (1984) provide a thorough and highly useful overview of the literature, and a series of superb case studies to help the reader to identify how best to apply the knowledge to specific project constraints and opportunities. Chandrasekharan (1983) identifies the nature of rural organizations affecting forestry programmes. Guess (1982) gives a political analysis of institution building.

Thompson and Warburton (1985) make the clearest connection. They say: "if land and wealth are seen as virtually synonymous, and if the population that has to live on that land is increasing rapidly, then we

have a negative-sum game from which the only possible relief is by way of population stabilization or increased productivity (or both). But, if the equation of land with wealth is severed, closure is no longer inevitable and it is possible (but by no means certain) that the game will be positive sum." They then suggest a variety of ways by which some groups spread risk and wealth-getting from sources other than the land. Indeed, they are most rare for folk in development studies, as they suggest that a most useful alternative for wealth-getting is nature-based tourism. Here they use the sherpas, whose political economy is not unlike that found in depressed rural areas of North America where mixtures of primary production, small scale, "mom and pop" tourist-serving enterprises and welfare payments serve as survival strategies. It is significant that their paper is one of the first to systematically consider nature-based tourism as a desirable alternative product to be "harvested" from forested ecosystems. They clearly demonstrate that, without the tourist as an alternative to treating land as wealth, there is no way to protect forests in the long run. Certainly, one would need to be totally fixated by 'hard' production to miss that even the poorest of the poor have religious holidays, elaborate weddings, games, and other forms of recreation, many of them associated with forest settings. Consequently, serving people from urban areas who enjoy the natural setting of hill stations and other rural areas is a logical economic use of forests that require their retention rather than their removal. So our third example of a social science approach—institutional analysis—serves to link motives to social structure, and suggests how students of social forestry strategies could broaden their range of possible benefits.

### Community Studies

One of the larger research literatures in social science has to do with the factors affecting adjustment to internal and external changes (innovations) by human communities. An analysis of this literature (Burch and DeLuca, 1983) suggests at least five patterns of adaption. First, in some communities a continuity in basic norms permits a smooth transition to changed conditions. For example, Bruner (1961) reports that the Toba Batak of Sumatra moved from a small, mountain village to a westernized, urban setting with minimum personal and social upset because they retained kinship as the major nexus of interpersonal relationships, along with patrilineal descent and traditional life crisis ceremonies. Second, some communities have normative systems "primed" to take the induced change. Eskimo transition from dog sled to snowmobile, Plains Indians' adoption of horse and rifle, Maori acceptance of the European sweet potato, are examples where norms of hunting or mobility, or a particular form of agriculture were "wet" for

innovations that enhanced existing norms. Third, changes in the material structure alters the normative structure. For example, a large number of anthropological community studies report that extensive material changes are overshadowed by changes in outlook and social relations (Holmberg and Dobyns, 1962). Fourth, in more successful adoptions, changes in social norms precede material changes. A large number of studies illustrate what happens when material changes outrun the normative changes, for example Sasaki (1956) describes the failure to transfer modern farm techniques to Navajos because the prevailing norms favored smaller, more subsistence farming. Fifth, in some communities rapid change, whether material or normative, improvement or decline, produces social fragmentation. The "boomtown" literature spawned by western energy development provides ample evidence of the need for appropriate timing of changes if severe social disruption is to be avoided.

There are not only different responses to different kinds of innovation and different kinds of community responses to internal and external perturbations, but the very processes and attributes vary in certain systematic ways.

#### Adoption Studies

The social forestry literature suggests that donor and host forest professionals are promoting at least four patterns of innovative change for rural villages—technology, taste, rules and values. Rural villages will be provided with better tree species, better means to harvest them and other technologies. However, these technologies may require changes in taste, e.g. smell and aesthetic preferences. If we follow Eckholm (1979) and others, we are altering land tenure roles, certain wood gathering roles assigned on the basis of gender and age, and the norms affecting relations between social strata. Finally, the beneficiary community may have survival practices directed by traditional values, rather than the rationalistic values which may be required if the seedlings are to survive.

As we move from technology innovations (better tree species) toward value changes (traditional to rationalistic) we move toward increasing resistance. However, much of social forestry is short on such well fitted physical technologies and depends more on changes in social practices and attitudes—different ways of organizing, planting and harvesting, different ways in accountability for the commons, different perceptions of the connections between traditional resource practices and hungry children, different time orientation and so forth. This discrepancy is no excuse for doing nothing, rather, it is an opportunity to develop, test and use social technologies which require different techniques of transfer. And therefore different types of "knowledge".

The work of Rao (1971) serves as a base for reporting on what is known about the attributes of the five elements that influence the adoption process: the attributes of the change agent, the attributes of the innovation, the attributes of the information source, the attributes of opinion leaders, and social status. We will simply consider part of the range of studies and the trends in empirical findings on the topic.

Out of nearly one hundred studies, the strongest support for an innovation is found to be given to those innovations that seem to permit a trial run. The perceived advantage and compatibility of the innovation are of reasonably strong importance, while complexity of the innovation does not seem a great consideration in adoption. Consequently, it would seem that the soundest strategy would be the introduction of social/community forest innovations that permit a trial run, where if the action is not satisfactory to the client it can be eliminated without great cost. Highly visible demonstration projects, or small items such as solar cookers, would seem important factors in encouraging the acceptance of an innovation.

A change agent who has the right credentials and an innovation that is right for a target population still must inform the population of the innovation. There are not enough studies on adoption that refine the media into magazines, newspapers, television and so forth. Nor are there ample studies on whether contact with friends, kin or change agents are more significant, but the strongest influence is when information comes from "personal" sources (77% of 60 studies). Further, there is complementarity in the two sources of information. The media make an innovation known, while contact at the interpersonal level provides knowledge about the innovation.

A crucial link in the adoption process is the opinion leader. These are persons whose judgement is trusted and who are asked their opinion on various matters. The opinion leader may be a person in the invisible college of scientists who knows the quality of research at various labs; it may be a local farmer who has consistently good crops, or it may be an editor of a trade journal. The studies indicate that opinion leaders are likely to be well-informed by the press and electronic media. They are likely to be more urbane and have higher social status. The strongest attribute is the innovativeness of opinion leaders. Apparently opinion leaders are willing to try new solutions, and this willingness to try reinforces their power as opinion leaders.

The studies suggest that early adopters have higher social status than later adopters. Age seems to have little influence upon adoption processes. Adopters have progressive attitudes towards science, change and risk taking, their life styles are progressive in that they are more cosmopolitan, less dogmatic and fatalistic, and they have high rates of social participation. The social context seems less important than the personal characteristics of the potential adopter.

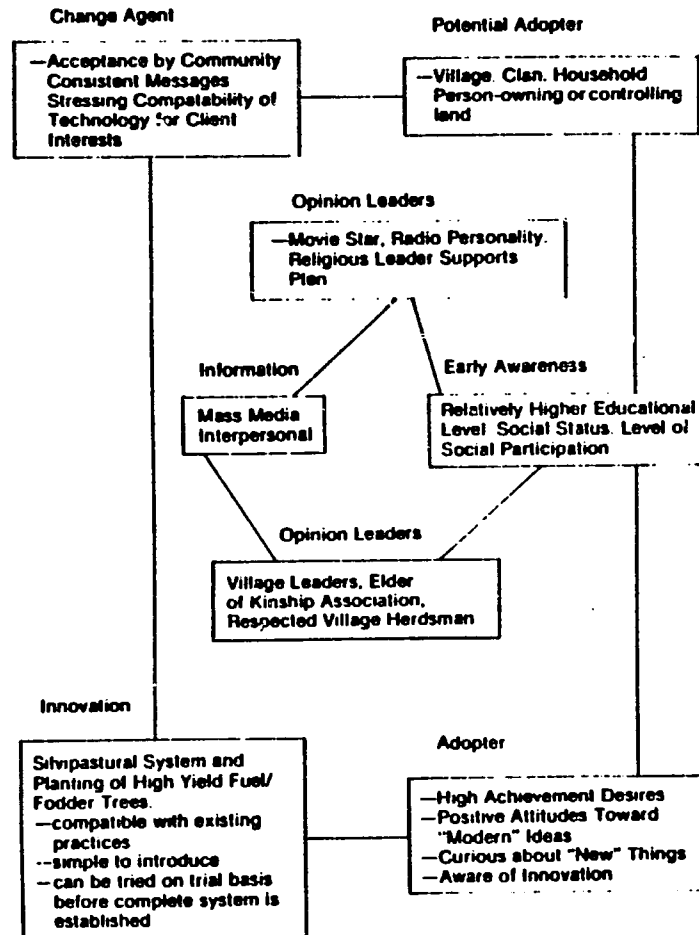


Fig. 1. A heuristic model of elements in social forestry transfer

Figure 1 attempts to sum up the previous discussion. It is heuristic rather than absolute in its suggestion of attributes and their connections. It really is a skeleton for including complexity, available social science literatures, and speculation about some likely connections in the planning of a social forestry project.

The five groups of studies considered here—assessment, tenure, institutions, community and adoption of innovation—provide an indication of the range of empirical studies that could help the social forester to plan, to predict, to prepare for action, and to provide some base for evaluating progress of the project. Further, Hoskins' (1983) distinction between community forestry and social forestry is excellent because it commends our attention to the unit of adoption. Not all villages are a communities—with heads, arms and legs that can be aided by project field persons. Indeed, most villages are made up of households, individuals, social roles, relationships and rules about appropriate and inappropriate behavior (Critchfield, 1981). The village elders may not like the idea of planting fast-growing trees, but the young women of the village might very much like the opportunity for some fencing material to keep the pigs out the garden. So part of the task in social forestry technology transfer is in identifying the appropriate entry points for certain practices. In some places it may be at the community level, while at others, it may be at the clan, household, or individual levels.

Hyman (1985) offers a useful complement to our model of adoption. A paraphrase of his nine necessary conditions for successful technology transfer is:

1. The innovation must fit the conditions of the target community.
2. The demonstration must be provided by local people for local people.
3. There must be effective means for two way communication between the change agent and the adoptees.
4. The change agent must understand and facilitate connections between the adoptee, the markets for their eventual products and other social forces resulting from the innovation.
5. The adoptees must be active participants in the planning and implementation of the innovation.
6. The results of adopting the innovation must be seen as a win-win situation.
7. Acceptance of an innovation is dependent upon understanding all the steps that affect the functioning of the innovation.
8. The environment where the innovation is demonstrated must be perceived as similar to the environment where it is to be used.
9. The initial enthusiasm of the adoptee must be strong enough to carry that commitment to the adoption until it is self-supporting.



However, it should be clear that the political constraints upon full equity of distribution will distort the diffusion of the innovation model. Rolling et al (1981) point out that the model may not reflect the change from tribal to peasant situations in developing countries. They are particularly critical of the pro-innovation bias, "that all innovations should be adopted by everyone. Often research concentrates on developing innovations which benefit larger and more educated farmers." Later they note: "it is not the characteristics of farmers, as much as it is the characteristics and deployment of government development services which are the prime determinants of diffusion efforts." Further, the unit of adoption is not always an individual farmer, but households or communities (West, 1978).

We have discussed some of the means for dealing with the problem they identified. While Jedlicka (1981) and others have developed ways of including clients in understanding the constraints on technology transfer and techniques of risk-shift in which groups rather than individuals share risk. He found in Honduras that: "87% of the farmers tested in groups accepted greater risk than they would as individuals. Significantly, women in the groups proved to be equal or greater risk-takers than men" (Jedlicka, 1981). This seems a significant place to end this overview on the application of social science to ensure success in social forestry programmes. In this sense, we take success to not simply mean the opportunity for the landless and the poor to do the work of planting trees, but also to share in a wider distribution of the benefits possible from the management of forested ecosystems.

Still, there are no magic, painless social bullets ready to bring forests to barren lands and to enrich the poor who are compelled to survive on them. The available theory, methods and findings are necessary and usually sufficient to deal with most forestry projects. The essential means for creating, establishing and sustaining high levels of social forestry success need to be assembled—a cadre of professional social foresters operating within an agency that rewards innovation, risk-taking, an ability to learn from mistakes, a certain irreverence for established systems and a capacity to meet the different outputs and actions of social forestry. Nearly all of the popular social forestry projects, including and especially agroforestry, direct their activities to greatly increasing the production of biomass in the hope that if enough is produced all of the necessary social and institutional structures will see to it that benefits will trickle down to all who need them. Yet people do not destroy forests because they are willfully destructive or negligent, but because, as Briscoe (1979) so clearly demonstrated, the social structure permits them no other option. Without alternatives to treating the land as the sole source of wealth and survival, there is the unintended pressure toward the ultimate destruction of the land's capability.

#### A TRAINING PROGRAMME FOR PROFESSIONAL SOCIAL FORESTRY

This concluding section attempts to link universal trends, problems and challenges to opportunities of training. Like the development of forestry training in the developing nation of the U.S. at the turn of the twentieth century, we will need some programmes to re-tool traditional, older graduates at the same time as we are training the younger professionals who will truly build and develop the field. Much of the work on social forestry since the middle 1970s has concentrated upon updating and readjusting professionals trained for very different practices—commercial silvics, logging engineering, agronomy and other direct production skills. Therefore, a variety of hurried introductions to social tools and techniques have been provided to "prepare" these social foresters. If we wish a truly professional social forestry training programme, then what has been an essential emergency training measure should not be used as the model for how the training of professional social foresters should be designed.

A second caution in designing a training programme is to not accept the university vision of the world. Universities have a remarkable tendency to divide the world into knowledge bins, to create academic departments around these bins and then to act as if the world were really subdivided. Yet, effective application of social forestry practice requires a holistic, integrative approach to a wide range of information and techniques.

Table 2 is an idealized illustration of how the social forester might approach the various stages of the forest cycle by combing bio-physical and socio-economic data and techniques. The specifics are less important than the awareness that equivalent data exist for both systems and that they must be given equivalency and combined for decision-making. Most often the left-hand column on the forestry planning cycle may be sufficient for commercial forestry practices. Yet in social forestry the right-hand column on social planning is both sufficient and necessary and must be combined with the biophysical data.

This suggests that the usuzi smorgasbord approach to curriculum design will not be the most useful, and we will not take care of the "people" problem by simply requiring an introductory course in rural sociology. Each social science has a unique perspective and methodology to contribute to our understanding of social forestry practices. However, each also has a large amount of information and interests that are mostly irrelevant to the practice of social forestry. Further, many social scientists are disdainful of studies and applications regarding rural communities in general, and forest communities in particular. So the need is to select the nuggets of useful knowledge from the accumulating silt of disciplinary inertia and, of equal importance, to select instructors with knowledge and commitment to forest and rural communities.

TABLE 2

## Coordinating social and forestry skills

Stages in Forestry Planning Cycle	Stages in Social Planning Cycle
1. <i>Inventory of biomass</i> species, volume, age classes, growth rates, etc.	<i>Serial Inventory</i> demographic-age structure, fertility-mortality rates, ethnic, etc.
2. <i>Market Analysis</i> end use, costs	<i>Market Analysis</i> demand projections, preferences
3. <i>Diagnosis</i> how to increase growth, reduce mortality, improve stocking, etc.	<i>Diagnosis</i> how to connect services to needful, close gap in poverty cycle
4. <i>Planning/ Prescription</i> working circle, harvest schedules, kinds of harvests, etc.	<i>Planning/ Prescription</i> labour force analysis, organizational analysis, etc.
5. <i>Site Preparation</i> marking, road and trail layout, operation recruitment	<i>Assessment</i> social impact assessment, cost-benefit analysis, training systems
6. <i>Harvest</i> supervision, scaling regulation, fire control	<i>Monitoring</i> time budget analysis, lost time accidents, foreign exchange
7. <i>Reforestation</i> nursery establishment, species seedling planning and planting protection	<i>Evaluation</i> long term trends in employment distribution of benefits and costs, social structure change and adaption, negative and positive social indicators

To prepare the social forester to accomplish the many tasks from social inventory to evaluation listed in Table 2 we will need a range of skills from a variety of disciplines, extracting the unique techniques of measurement from each of the social sciences so that inventory, assessment, monitoring and evaluation can be direct and systematic. Hence the first required course is one on the "Methods of Social Science Applied to Forestry Issues." An individual instructor may be sufficiently broad-based to extract the necessary techniques from each of the disciplines or a selected team from the various disciplines may be required. A mixture of in-class explanation and field application should be developed for the following techniques and disciplines. (Approximately six contact hours per topic should be planned.)

1. *Demography.* Techniques of sampling small-scale human populations, developing predictions of structure, trends, growth rates and so forth to inventory target communities.
2. *Anthropology.* Participant observation and the use of key informants in collecting data on cultural values and practices in resource production, use and distribution.

3. *Sociology.* Systematic observation (e.g. use of formal schedules); design of small scale survey; sociometric and time budget studies; non-reactive trace measures; collecting data on social categories, groups and roles affecting production, use and distribution of natural resources.
4. *Political Science.* Reputational studies; small scale voting or other public choice measures; attitude and opinion measures; leadership structure measures to identify key structural constraints and opportunities in forestry programmes.
5. *Psychology.* Standardized measures of motivation; preferences and perception to locate individual characteristics that constrain or open opportunities for forestry programmes.
6. *History.* The use of documents and oral histories; trace measures of indigenous actions; knowledge and experiences to identify traditional and normative constraints and opportunities for forestry programmes.
7. *Economics.* Cost/benefit analysis, micro and macro economic analyses, location decision analyses, surrogate measures for unpriced benefits. To monitor and evaluate the efficiency of projects.

The next six required courses could come from a variety of academic departments. However, it is crucial that the instructors are committed to social forestry issues and applications. The course on marketing is a crucial one because it helps to consider the full array of goods and services that could be marketed, rather than giving primary attention to sawtimber, pulpwood and fuelwood. The course on geographic analysis aids inventory and diagnosis, but is most crucial for planning. Courses on environmental sociology and cultural ecology provide theoretical and substantive applications to all stages of the social forestry cycle. While the courses on organization and communication are the essential means for ensuring that the analyses, diagnoses and prescriptions actually get implemented. Short descriptions of these proposed required courses follow.

1. *Geographic Information Systems.* This should be taught so that it combines socio-economic and biophysical variables. Training should use one of the GIS programs that operate on a personal computer. These techniques are interactive and permit the "visual" planning to be shared with target groups for their understanding, input and change.
2. *Marketing.* The design of this course should be such that it concentrates upon "minor" forest products—mushrooms, snake skins, charcoal, small scale tourism, etc. This is a course in applied sociology and psychology.
3. *Environmental or Natural Resources Sociology.* This is a course that

translates major theoretical approaches and accumulating empirical findings to the direct interest of natural resource management. There should be solid sections on organization of resource agencies and firms, institutional structures, attitude formation and mass movements, factors affecting change and stability in social structure.

4. *Ecological or Resource Anthropology*. Like No.3 above, this course translates basic theories of village, peasant and tribal communities in terms of resource-cultural interactions.
5. *Organizational Systems in Resource Management*. This is a course from political science, sociology, or a management school that brings to bear extant social science theories and empirical findings upon resource management practice.
6. *Communication Skills for Resource Managers*. Practice in organizing hearings, community meetings, use of communication media such as video, public speaking experience, writing crisp messages for the general public, skill in understanding audiences. Again, this is a crucial application of social science.

These six courses are an essential core of the social science component of a professional social forestry training programme. The list is by no means exhaustive. Further, the special problems of regions and countries will require some modification of the details I have noted. And though there may be challenges on the margins of this social science curriculum, I am certain that the core issues are correct.

The social forester needs skills in: (a) social measurement that covers the full range of essential possibility in social life; (b) an ability to group and display the data gained from these measures, and a way of connecting them to biophysical data; (c) an understanding of what and how to market cash products such as honey, mushrooms, baskets etc; (d) an overall interpretative framework for perceiving the functioning and processes of social structures and cultural values; (e) a means to create and to manage the various internal and external species of social organizations affecting humans and forests; and (f) an ability to listen, to interview, to organize, to give voice to, to persuade, to inform, and to direct the participants in social forestry projects.

One could argue, of course, that these social skills would be essential for all resource professions, and I would agree. Yet, the goals, means, constraints and opportunities of traditional resource professions are on a different pathway from social forestry. Our demand is no less than to create a professional who is neither exclusively an applied social scientist, nor exclusively an applied biologist, but rather one who combines such necessary knowledge to "provide the greatest good of the greatest number, in the long run." That is quite a different proposition from maximizing the production of biomass.

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## Résumé

L'opposition à la sylviculture traditionnelle, qui se concentre sur la production du bois industriel, la sylviculture sociale est orientée principalement vers l'alimentation et l'ancrage des communautés, et elle exige donc le développement de techniques spéciales chez ceux qui la pratiquent. De telles techniques concernent les relations humaines plutôt que la manipulation sylvicole ou la culture des arbres, et elles font souvent défaut chez les forestiers formés selon des programmes d'études conventionnels. Cet article identifie quelques exigences pratiques importantes dans les projets de sylviculture sociale et les met en rapport avec des aspects clés des théories, des méthodes et des constatations de la science sociale (à d. des études sur l'évaluation, le bail, les institutions, les communautés et l'innovation), qui peuvent améliorer l'élaboration et la mise en oeuvre des projets et contribuer au développement de la sylviculture sociale en tant que discipline indépendante. En conclusion l'article propose un programme d'études pour la formation des forestiers sociaux professionnels.

## Subsection E

### THE ROLE OF GENDER IN CURRICULUM DEVELOPMENT

Source: Sheehan, Nancy. 1986. A Curriculum Guide For A Course On 'Gender Roles in the Community Approach to Forestry'. Tropical Resources Institute Working Paper No. 16, Yale School of Forestry and Environmental Studies, New Haven, CT, USA.

Note: This subsection provides an outline for a course addressing the important and integral role women play in natural resource issues; it combines women in development (WID) issues with forestry issues, particularly at the international level. Specifically, this example course, "Gender Roles in the Community Approach to Forestry," looks at the role of women in forestry development. The course has many key elements such as women's diverse realities, female subordination, development theories, politics and bureaucracy, and course direction i.e., women in forestry development and project programming. Sheehan (1986) points out that in the past, development projects have had some adverse effects on gender relationships, and as a result there has been (1) a disintegration of the sustainable balance between conservation and utilization of forest resources and (2) a breakdown of the equity balance between men and women. There is a wide variety of courses that can integrate women in development, and this course is one example. "The materials presented herein should act as food for thought and not as the only means for achieving integration."

## **B. Outline of Course Topics**

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### **I. INTRODUCTION AND OVERVIEW**

- A. WOMEN IN DEVELOPMENT**
- B. REVISED FOREST POLICY FOR CHANGING ENVIRONMENTAL AND SOCIAL NEEDS**
- C. WOMEN IN SOCIAL FORESTRY**

### **II. THREE FRAMEWORKS FOR 'VISUALIZING' WOMEN**

#### **A. HOUSEHOLD AND MARKET PRODUCTION SYSTEMS**

- 1. WOMEN AS DISTRIBUTORS, BUYERS AND SELLERS OF FOREST PRODUCTS**
- 2. WOMEN AS NON-PAID, 'INVISIBLE' LABOURERS**

#### **B. WOMEN'S HOUSEHOLD ROLES IN SUBSISTENCE AGROFORESTRY**

- 1. WOMEN AS PLANTERS AND HARVESTERS OF AGRICULTURAL AND FOREST PRODUCTS**
- 2. WOMEN AS APPRECIATORS OF THE ECOLOGICAL IMPORTANCE OF TREES AND FOREST STANDS**
- 3. WOMEN AS PRESERVERS OF TRADITIONAL FORESTRY PRACTICES AND SILVICULTURAL SYSTEMS**
- 4. WOMEN AS MOTIVATORS FOR ENVIRONMENTAL IMPROVEMENT THROUGH THE USE OF TREES**

#### **C. BIOMASS ENERGY**

- 1. WOMEN AS COLLECTORS OF BIOMASS ENERGY (E.G., FUELWOOD AND DUNG)**

### **III. EFFECTS OF NOT INCLUDING WOMEN IN DEVELOPMENT PROJECT PROGRAMMING: REASONS FOR DEVELOPMENT PROJECT MISBEHAVIOR**

### **IV. PROGRAMMATIC SUGGESTIONS**

- A. WOMEN'S FORMAL AND INFORMAL ORGANIZATIONS**
- B. WOMEN'S ACCESS AND CONTROL OF FINANCIAL AND NON-FINANCIAL INSTITUTIONS**
- C. WOMEN'S ACCESS AND CONTROL OF POLITICAL/LEGAL FORMAL AND INFORMAL ORGANIZATIONS**

### **V. CASE STUDIES \***

\* Although several references are provided in the bibliography, this section is left up to the discretion of the professor according to his/her own international experience.

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The following excerpts are from Part II, the description of course topics. They follow the outline of course topics on the preceding page. Every effort has been made to ensure the accuracy of these excerpts.

## "I. INTRODUCTION AND OVERVIEW"

### "A. Women in Development

The reading materials selected for this section of the course cover a wide range of topics concerning women in development. Most of the materials are early works by authors established in this field. They provide the student with a challenging survey of the conditions of women in developing countries, ..."

"... one methodological directive will be stressed throughout: the conceptualization of traditional roles of women in rural-based cultures must not be rooted in Western stereotypes of women's roles but rather must be rooted in an inquiry into the actual situations of women in their social and ecological communities.

This directive has not been internalized completely. Project programming has not involved sufficient research of these roles; many (forestry) development projects have had negative effects on women. In other words, development projects are one of the several factors contributing to the underdevelopment of women."

"In reality, these gaps in proper analysis of which underdevelopment is a symptom are indicators of a larger problem—the lack of adequate training for development professionals. Therefore, to fill these gaps, academic institutions must make it their objective to train students to be aware of the necessity for new methodologies which uncover or, rather, which help students 'visualize' women's roles in household and market activities.

Given this objective, the first section of the course will detail weaknesses evolving from the omission, reinforcement, and/or addition of Western stereotypes expressed in development projects. The strengths of various projects that have succeeded in WID terms will also be given."

### "B. Revised Forest Policy for Changing Environmental and Social Needs

In this section, a discussion of the ecological status of forests is given. This discussion is to impart a sense of urgency for action. Most of the materials used in this section will emphasize the status of forests in the Third World and the ability of proper forest development policies to improve this status."

"A brief historical review of forestry development projects will also be presented. The historical perspective will provide students with an idea of the evolution of forestry policies adopted by development assistance agencies and of present forestry policy."



## "C. Women in Social Forestry

The core material of the third subsection will examine rural women as foresters and as forest users. The readings will also cover the traditional roles women can and do play in social (community) forestry projects. In this respect, this section sets the tone of the course and presents the building blocks for integrating the methodology of women's studies to forestry studies (as they pertain to the developing world)."

"At the end of Section II, the instructor will present illustrations of: the interconnections between women's life-patterns and their basic needs; and, forest/tree sustainability and yield. ...The three frameworks are not to be viewed as the only useful viewfinders; others exist depending upon a person's perception of WID issues. Briefly stated, these interconnections are:

- (1) household and market production systems— ...
- (2) women's household roles in subsistence agriculture in particular agroforestry systems— ...
- (3) biomass energy— ..."

## "II. THREE FRAMEWORKS FOR VISUALIZING WOMEN"

### A. Household and Market Production Systems

Women use collected forest products within households and for external market trading. To explore how trees are critical to the functioning of the home and small-market enterprises, the lecturer must turn to a description of household production systems."

### "B. Women's Household Roles in Subsistence Agriculture in particular Agroforestry Systems

Frequently, Third World women's interest in planting trees is indirect or secondary to their interest in planting agricultural crops. In fact, the majority of families living at the subsistence level depend entirely, or in part, on the foods they are able to produce in their gardens, dooryards and other manipulated areas. A traditional strategy employed by farmers to integrate simultaneous or intermittent growing of agricultural crops with woody perennials . . . is . . . agroforestry. The frequency with which this strategy is used by rural people demands its coverage in a course on women and forestry. This system has also been selected because various skills from agriculture and silviculture to animal husbandry are required to maintain the system. Thus, the system is a good tool for describing women's wide range of ecological knowledge and for illustrating women's multi-faceted roles.

In the first stages of discussing women and agroforestry, the lecturer should provide students with materials describing agroforestry."

"... Following this discussion, the lecturer should present the 'myths and realities' of women and agroforestry..."

#### "C. Biomass Energy

Throughout the following discussions, the lecturer should stress the multi-use aspects of trees in developing countries. This is particularly important for Western students who more readily perceive lumber and saw wood as tree-products but who might not perceive trees and forests as sources of medicines, fodder, fuelwood, and food."

#### "III. EFFECTS OF NOT INCLUDING WOMEN IN DEVELOPMENT PROJECT PROGRAMMING"

"The first two sections impart a sense of women's diverse realities and the degree to which women and men are dependent on the productivity of forests and trees and are interested in and capable of ensuring the sustainability of wooded areas. The student should [sic] be [made] aware [in this third section] that development in general and forest development in particular has not eradicated poverty and inequality nor halted deforestation. At this point, the student should be searching for reasons for the failures and successes of development projects in order to better formulate future projects. Therefore, in the fourth section the instructor should present the existing body of literature addressing these questions."

#### "IV. PROGRAMMATIC SUGGESTIONS"

"Next suggestions to the question of 'how to' include women should be partially presented. These suggestions can be organized into three main opportunity/constraint areas.

1. Women's Access to and Control of Technology and Land:
2. Women's Organizations:
3. Women's Access to and Control of Financial Resources:"

C. Outline with Selected Reading List  
NOTE: ENTRIES MARKED WITH # ARE ANNOTATED IN APPENDIX 3

\*\*\*\*\*

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\* Section to be completed at the discretion of the lecturer



## Subsection F

### CURRICULUM DESIGNED TO PROVIDE STUDENTS WITH 'LEARNING BY DOING' EXPERIENCES

Source: Macadam, Robert D. 1988. "Systems Agriculture — An Alternative Approach to Agricultural Education, Research and Extension for Rural Development." *Perspectives in Education*. Vol. 4, No. 1: 3-11.

Note: At the Faculty of Agriculture and Rural Development in the University of Western Sydney (formerly Hawkesbury Agricultural College), students 'learn by doing'. Some elements of the program are described below.

"...One way this is achieved is by placing undergraduate students on the farms of cooperating farmers for four months midway through their programme. There they live and work with the farm family. They also conduct a systems analysis of the situation. Together with the farmer they identify problems or issues they can continue to work on as problem-solving and situation improving projects when they return to college. These projects are a form of action research. The projects undertaken by the students are supported by learning materials and activities developed by the staff. Group activity is a feature of the programmes and the creation of an interdependent learning environment is cultivated. ..."

"Because the projects are based on real situations they are inevitably multi-disciplinary. Students are expected to utilize appropriate resource people and they soon become adept at identifying and contacting appropriate resource people from a wide range of disciplines, on and off campus. The strategy results in government agencies, farmers and commercial and marketing organizations being involved in interdependent learning projects with students and staff of the College. During the last year of the undergraduate degree programme students work on projects related to the career they wish to pursue — potential school teachers with education bodies; extension workers with extension agencies; commercial representatives with commercial firms and so on. The networking on which these linkages are based is initiated by staff and students, usually on an informal basis with individuals in the various organizations. ..."

"By basing our programme on action research projects undertaken by learners we believe:

- the learning is internalized and hence more effective;
- staff and students are exposed to the realities of rural life;
- the competencies that are needed to be effective as a professional agriculturalist are validated;
- new methodologies and techniques for situation-improving are developed;
- .. more appropriate relationships are developed between clients and professionals;
- the farmers and others who collaborate in the projects benefit by learning about themselves and how to improve their

- **situation;**
- **appropriate technology is developed; and**
- **improvements are effected."**

**Subsection G**

**INVENTORY OF SOCIAL SCIENCE AND NATURAL  
RESOURCE MANAGEMENT CENTERS IN NEPAL**

**Source:** Messerschmidt, Donald A. 1987. Working Paper on a Social Science Curriculum for the Institute of Forestry, Nepal. A Consultant Report submitted to the U.S. Agency for International Development, Kathmandu, Nepal. July 10, 1987.

**Note:** The following report inventories resource centers and the kinds of social science and natural resource management related materials available in Nepal. More importantly, it identifies internally and externally available resources which might be utilized to integrate the social sciences into a country's forestry curriculum.

### 1.3 RESOURCES

Literature Sources and other Secondary Sources in the Social Sciences, with Special Reference to Nepal & to Rural/International Development and Resource Development and Conservation Topics.

#### 1.3.1 Libraries and Special Collections

(1) The Institute of Forestry (IOF) library, Pokhara and Hetaura campuses, is extremely limited in its resources in the natural sciences, and all the more so in the social sciences. The social scientist appointed to the IOF is strongly advised to bring with him/her all principle and supplementary textbooks, case studies, journals and journal articles, and other pedagogical materials necessary for teaching,-- advising and conducting research in what is, essentially, a literature resource poor situation. Materials can be xeroxed in multiple copies for distribution, if necessary.

At the same time, it is recommended that the Library Committee of the IOF draw up a prioritized list of library resource materials -- journals subscriptions, books, monographs, maps, etc. -- for immediate purchase in the second phase of USAID funding. All areas of study at the institute should be included, but social science materials, especially, should not be neglected.

(2) Other Library Resources within Nepal with social science materials include, of course, the library of the Forest Research Division at Babar Mahal, Kathmandu, as well as the main Tribhuvan University Library, and the libraries of the Centre for Economic Development and Administration (CEDA) and of the Centre for Nepal and Asian Studies (CNAS). The latter are on the main Tribhuvan University campus in Kirtipur, near Kathmandu. There are also some resources available at the library of the Institute of Agricultural and Animal Sciences (IAAS) at Rampur, especially useful in the study of Agro-Forestry.

In addition, the USAID Library at Rabi Bhawan has some useful materials, as well as the offices of its various projects (Rapti Zone Development Project, Integrated Cereals Project, etc.). Other international donor development agency libraries might also be useful -- e.g., the Swiss Association for Technical Assistance (SATA) at Ekanta Kuna in Jawalakhel; the German Agency for Technical Assistance (GTZ) and its Dhading District Development Project (DDDP), both in Pulchowk; the British, the French, etc. See also the library at the United Nations Headquarters Building, in Pulchowk, which includes FAO, WHO, UNICEF, UNDP, etc.

The library of the International Centre for Integrated Mountain Development (ICIMOD), in Jawalakhel near Kathmandu, is an excellent source of materials on mountain research and development topics. See also the offices and individual researchers within ICIMOD dealing with social science, rural energy, forestry, economic development, etc.

The library of the Agricultural Projects Services Centre (APROSC), in Kathmandu, is an excellent repository of socio-

economic materials on Nepal, particularly topics in agriculture and rural development.

### 1.3.2 Published and Unpublished Sources

There are a number of sources for theoretical, methodological, practical and descriptive social science literature relevant to natural resource development and management study and research. A great deal is available on social science perspectives on international development and on Nepal, the Himalayas, and South Asia generally, in Journals, Monograph Series, Anthologies and Case Studies, Annotated Bibliographies, Seminar and Workshop Proceedings, Project Reports, Professional Evaluations, and so forth. In the following description of sources, specific examples are given by number from the list of References in Part I. The list of sources given here and in the References are meant to be descriptive and suggestive, but by no means exhaustive.

#### (1) Journals

The following list is of both international and Nepalese journals of importance for use in the study of natural resource management and rural development from a social science perspective. Several of them are important enough to be on subscription for the IOF library, and are so indicated.

a. Mountain Research and Development, International Mountain Society (published in the USA). Includes excellent research studies, and articles with important theoretical and historical perspectives on the inter-relationship between the natural and social resources of the Himalayas, including social forestry and development policy. There are also good comparative pieces based on research into human adaptation, resource degradation, and resource management from other mountainous regions of the world. (For Nepal, see: 10, 85, 88, 100-103, 113, 141, 150-151). While a new subscription has recently been begun for this journal, the IOF library at Pokhara should request a complete set of back issues in order to secure all of the earlier articles on Nepal and the Himalaya. Write to Jack Ives, Editor, P.O.Box 3128, Boulder, Colorado 80307 USA.

b. Nepalese Social Science Journals of note include Contributions to Nepal Studies of the Centre for Nepal and Asian Studies (CNAS), Tribhuvan University. While not specifically development oriented, occasional articles feature topics of cultural ecology, the organization of Nepali social groups, and other theoretical and descriptive case studies based on indepth research within Nepal. An important source for description of Nepali life and culture. (See: 28, 158.) Should be on subscription at IOF library.

Other useful social science journals from Kathmandu include Kailash: A Journal of Himalayan Studies, the Himalayan Review of the Nepal Geographical Society, Prashasan (The Nepalese Journal of Public Administration: see: 156), and the Journal of the Nepal Research Centre (see: 139). See also publications from the Centre for Economic Development and Administration (CEDA) of Tribhuvan University (see: 2, 94, 95).

c. Human Organization, Society for Applied Anthropology (published in the USA). Frequent articles dealing with international development subjects, participatory action, etc., with occasional titles on South Asia and Nepal (see: 50, 111, 148).

d. Development-Specific Journals include: World Development (published in the U.K.; see: 11, 93), Development (of the Society for International Development; see: 134-136), The IDS Bulletin (of the Institute for Development Studies, Sussex University; see the various publications from IDS: 9, 18, 33, 38, 40, 72, 79, 96, 123), Agricultural Administration (published in the U.K.; see: 30, 73), Public Administration and Development (see: 35), Journal of Development Studies (see: 36), and occasional articles on development in Public Administration Review (see: 91). These all have excellent articles on international development, with occasional titles on Nepal. Among them, some titles should be available on a regular basis to IOF students, such as World Development, Development (from SID), and Agricultural Administration. Titles available on agro-forestry from the International Council on Research in Agroforestry (ICRAF) in Nairobi, Kenya, should also be looked into; ICRAF has a strong social science component dealing with development work in agro-forestry.

e. Human and Cultural Ecology Journals are also recommended for the IOF library. There are also a variety of international journals on human and cultural ecology. One of the best that combines the quantitative orientation of human ecology with the qualitative aspects of cultural ecology is Human Ecology (published in the USA). Occasional articles on Nepal and the Himalayan region. Should be considered for subscription to IOF library.

f. Miscellaneous Other Journals of Note. See also occasional articles on the social history of forests and forest development internationally, in the Journal of Forest History (United States; see: 154).

## (2) Monographs Series, Anthologies, Reports, & Special Studies.

a. ICIMOD Publications. Publications of the Kathmandu-based International Centre for Integrated Mountain Development (ICIMOD), and affiliated institutions (e.g., The Mahendra Trust for Conservation of Nature, the East-West Center, etc.) are important sources for special case studies, critical evaluations, topical and literature reviews, etc., on a variety of subjects of importance dealing with sociological and anthropological perspective on mountain research and development. (See: 5, 15, 17, 29, 48, 49, 77, 98, 112, 114, 119.) The IOF library should have the ICIMOD Occasional Paper series, and other publications.

b. APROSC Publications. Nepal's Agricultural Projects Services Centre (APROSC; see: 26, 107-109), publishes a great deal of useful materials in its several research and topical series. Some publications are done in association with Winrock International (and, earlier, with the Agricultural Development Council). APROSC has published a number of insightful short case studies by Nepali researchers dealing with forestry, agro-forestry and other topics on agriculture and on natural

resources. Many are focussed on micro-economics; a few have an anthropological and/or rural sociological perspective. Regular AFROSC publication series and other special publications of interest to forestry, agro-forestry and the social science of development should be maintained in the IOF library.

c. Other Local Sources. See also occasional publications and papers from various private applied social science consulting firms (e.g., New ERA; see: 66, 67), Integrated Development Services (IDS; see: 80), Development Research Group, and others) in Kathmandu. Selected titles from these organizations should be available to students and staff in the IOF library.

d. Rural Development Committee Series. Publication of the Rural Development Committee of Cornell University (Ithaca, New York), include items directly relevant to people's participation and local organizations in the developing world. Many are based on solid Asia-based (some Nepal-based) case studies (e.g., Small Farmer Development Program/Nepal). Many publications have a political science, economics and/or general sociology orientation. (See: 42, 56, 57.) All of the titles in this series should be maintained in the IOF library.

e. The Institute for Development Anthropology (IDA) of Binghamton, New York, has published some outstanding works on international development. (IDA regularly publishes proceedings of its conferences, and anthologies on special topics of interest to the rural and natural resource development through Westview Press of Boulder, Colorado, USA. Westview Press has many monographs and anthologies on topics of rural and international development, natural resource management, environmental sciences, ecology, etc., many of which would be quite useful to the IOF and should be maintained in its library. (For example, see: 13, 21, 60, 83, 105, 157.) See also occasional books published on development issues from Cambridge University Press (see: 99), and others.

f. The Institute of Development Studies, Sussex University, Brighton, England, has some very important publications. The inspiration of Robert Chambers and his colleagues at Sussex is considerable in the development literature, especially dealing with people's participation and to methodology of rapid rural appraisal. (Listed above.) IDS at Sussex sponsors annual workshops and study courses for students and development officers from developing countries, which might also be looked into as a potential training resource for IOF staff and faculty.

g. Other Publication Sources of Note. See also publications of the International Development Institute (Bloomington, Indiana; see: 125), the East-West Center (Honolulu, Hawaii; see 121, 146), the Land Tenure Center (University of Wisconsin, Madison, Wisconsin; see 70), the International Council for Research on Agro-Forestry (ICRAF; see 78), the Ford Foundation (especially out of New Delhi; see: 37, 39), the World Bank (Washington DC; see: 32, 41, 122, 130), the Food and Agriculture Organization of the United Nations (FAO; note especially publications coming out of the FAO Regional Office in Bangkok, and in general, FAO's publications on community forestry, see 12, 16, 27, 58, 59, 71, 87, 105, 106), the International Labour Organization (ILO; see: 31, 81), the Economic and Social Council for Asia and the Pacific (ESCAP; see: 104), etc. See also the newsletters

from various forestry related organizations such as the Forestry Support Program of the U.S. Department of Agriculture with the U.S. Agency for International Development (Washington DC), and from the F/FRED regional forestry project headquartered in Bangkok (newsletter published by the principle contractor to USAID for this project, Winrock International, from its Washington DC office).

The Board on Science and Technology for International Development of the U.S. National Academy of Sciences (Washington DC) has published a number of important anthologies on topics of development, natural resources, the environment, etc., many having a sociological orientation, and most with a policy orientation. (Sec; 6, 7, 117, 128.)



## SECTION 5

### INTEGRATING THE SOCIAL SCIENCES IN A MODULE ON THE SILVICULTURE OF MULTIPURPOSE TREE SPECIES: PROCESS AND CONTENT

**Note:** As part of the recent Curriculum Development workshop held at the Institute of Forestry (IOF), in Pokhara, Nepal, participants addressed questions about: 1) the process of integrating the social sciences in a module (i.e., segment) of a course on the silviculture of multipurpose tree species (MPTS), and 2) the potential substance/content of such a module. The leaders of this training session in module planning were Amulya Tuladhar, Ridish Pokharel, and Don Messerschmidt, all working at IOF.

Two background documents (see Attachments 1 and 2) served as examples, one outlined a silviculture course taught at IOF, and a second surveyed social science aspects of various courses taught at IOF. These helped focus discussions on the nature of opportunities available to integrate the social sciences in existing technical forestry courses.

The following briefly summarizes participant discussions during the session. It is important to note this was one of many activities during the workshop and the results of this training session are illustrative rather than comprehensive. More emphasis was placed on outlining the elements of a module planning process than on specifying the content of such a module. Participants suggested a range of technical and social science topics that a course on the silviculture of MPTS might address.

## Process of Module Planning and Implementation

Workshop participants addressed the following questions concerning the development of a module integrating the social sciences in a course on the silviculture of multipurpose tree species. These questions raise topics to be considered in the process of designing and implementing such a module.

1. Need for a module
  - A. What are the basic assumptions underlying the need to develop such a course module?
  - B. Who determines the need for such curriculum development?
2. General nature and quality of a module
  - A. How does one define the essential ideas of the module? Its purpose? Its intended educational impact?
  - B. What are the fundamental and most appropriate questions, issues, and problems that must be addressed by curriculum designers?
  - C. What are the "nodes" of entry for the social sciences?
  - D. How can we maintain the quality of the biophysical sciences when the social sciences are integrated?
3. Designers of a module and sources of input
  - A. Who should be involved in the design of such a course module? What range of "experts", "clients", "users", and others should be involved?
  - B. What is the role of alumni as a source for direction in the planning of a module?
  - C. What is the job market for forestry professionals and how does this market affect the design of this module?
4. End users of information and knowledge imparted in a module
  - A. Who are the end users of the information/knowledge imparted in the module?
  - B. What do they need and want to know?
  - C. What are the respective roles of teacher and student in the learning process, information collecting, screening, teaching, validating, etc.?
5. Resources available for design and implementation of a module
  - A. What resources (e.g., personnel, financial) are needed to develop and implement a course module?

- B. How are these resources identified?
  - C. How are they obtained?
  - D. From whom?
  - E. By whom?
  - F. When?
  - G. Why?
  - H. How should they be structured into the classroom, field exercises, or other activities of the module?
6. Knowledge required, available, and accessible for development and implementation of a module
- A. What fundamental or basic information is needed to develop and implement a module?
  - B. What variables are important to know and build in/consider in a module?
  - C. At what depth of knowledge should the integration occur?
  - D. What kinds of knowledge must the teacher/professor manage?
    - 1) Knowledge from a specific discipline (e.g., theories, methods, and substantive findings).
    - 2) Resources available to impart knowledge (e.g., faculty from other departments who might teach a module, existing literature, sources of potential financial support).
7. Educational learning opportunities for implementation of a module
- A. What criteria are used to select appropriate strategies (e.g., literature review, class lectures, field study) to address the fundamental and most appropriate questions, issues, and problems?
  - B. What is the role and value of each of the following examples?
    - 1) Students listening to their professor ask farmers questions in the field.
    - 2) Use of case studies where analysis requires questioning.
    - 3) Field trips:
      - a) Technical activities such as planting, silvicultural techniques.

- b) Socio-economic activities such as interface with farmers, learning and listening, exchanging knowledge, rapid rural assessment techniques.
  - c) Give select students responsibility for planning field trips.
  - d) Require student follow-up through debriefing, reports (oral and/or written), and other activities.
- 4) Learning by role playing.
  - 5) Use of Audio-visuals.

#### 8. Evaluation of a module

- A. How can we evaluate the course module?
- B. What are the indicators (e.g., adequacy, accuracy, appropriateness of the knowledge imparted)?
- C. Who should evaluate (e.g., students, faculty, local farmers)?

#### Content of a Course on MPTS with a Social Science Module

The workshop participants raised the following issues and questions about the relevant content of a module integrating the social sciences in a course on the silviculture of multipurpose tree species. These issues and questions are illustrative of many substantive concerns possibly addressed in a module. Many of the issues and questions associate the content of a module with the transmittal of that content.

- 1. Questions dealing with the kinds of knowledge necessary to enable foresters to be better field practitioners such as the following:
  - A. How to determine local needs for MPTS?
  - B. What planting techniques are appropriate?
  - C. What management techniques (e.g., thinning, pruning, felling, traditional management techniques) might be applied?
  - D. What knowledge should the forester share with farmers through extension activities?
    - 1) understanding potential outputs and characteristics of specific species.
    - 2) mensuration techniques.
    - 3) production variables to obtain optimum biomass, fruit, wood production, etc.

- E. What is the range of appropriate questions foresters should ask to determine the utility of local management and production systems or techniques?
  - F. What tools exist to determine the value (for whom and of what) of traditional as well as non-traditional systems of tree/forest management?
2. What kinds of knowledge are available for a module (e.g., basic knowledge, relevant knowledge from practical application of basic knowledge)?
  3. What essential concepts and basic skills do we need to impart to students in the course? For example, we might want to train students:
    - A. not only in current pruning techniques but also in communications skills to facilitate working with local farmers to learn about traditional pruning techniques.
    - B. how to ask farmers questions regarding their needs, objectives, goals.
    - C. how to determine what simple technical applications farmers need which supplement, complement, or replace their current techniques, technologies, etc., and how to add to the farmer's repertoire to improve local resource management.
  4. Why are these concepts and basic skills important?
  5. How does one organize the range of opportunities for teaching and learning such as classroom lectures, field tours, laboratory exercises, research projects, etc.? Separate modules on specific topics? Lectures integrating concepts? Field tours utilizing a range of skills?
  6. How do we instill the ability to see, think, ask, question, make conclusions, then act appropriately? This is a higher order question, not about specific content but about the learning process itself.
  7. Attitudes that need to be instilled as part of the educational process
    - A. What attitudes are required by good, skilled forestry graduates that enable them to link their professional knowledge with the farmer's knowledge?
  8. Some technical forestry questions to address in the process of developing a course:
    - A. What are the relevant silvicultural systems for forests?

- B. What are the relevant silvicultural systems for single tree management (including traditional management systems)?
  - C. What are the different silvicultural, mensurational and management techniques and assumptions for MPTS compared to forest silviculture?
  - D. What are the silvics of indigenous trees? Of exotic trees?
  - E. Are there different learning strategies and educational materials that best impart knowledge about tree management as compared to forest management?
  - F. How do we bring any differences into teaching, learning, and practice through the development of a module?
  - G. What technical variables should be considered in the selection of a species? Are other variables relevant? What are they?
  - H. Are there variations in the content of a module because of agroecological differences (e.g., terai vs. hill areas)? What do students need to know in order to work effectively as local conditions dictate?
9. Some social science questions to address in the development of a module:
- A. What social concepts are important to build into a module based on the nature of the course, the technical issues being addressed, the knowledge required to be an effective practitioner, etc.? Some questions might include:
    - 1) Indigenous knowledge
      - a) What is it?
      - b) How do you determine its value?
      - c) How can it be used?
      - d) Who has it?
      - e) How do you obtain it?
    - 2) Local participation
      - a) What does it mean?
      - b) What do you need to do to ensure it? What skills are needed?
      - c) What are the costs and benefits of it for the local people? For resource management?
    - 4) What is the relevance of local social organization and social

structure in the silviculture of MPTS?

- 5) What is the relevance of seasonality and of local beliefs on tree management?
- B. When should these concepts be built into the course? At the beginning? At the end? At various points during the course?
- C. How should these concepts be built in? What should go into a separate module? What should be included in fully integrated activities?

### Conclusion

This training session was valuable in that it provided an opportunity:

1. to identify challenges (e.g., improving natural resource management for the benefit of local people) to the forestry profession that should be addressed in the preparation of current and future practitioners;
2. to encourage dialogue between biophysical and social scientists about what knowledge (e.g., theories, methods, and substantive findings from various disciplines) is needed to enhance the education of practitioners;
3. to discuss opportunities, constraints, and processes for integration of relevant knowledge and skills from other disciplines (e.g., technical questions that have social implications, observation skills, problem-solving that infuses technical, social science, and other knowledge and skill domains);
4. to present some preliminary ideas on the range of teaching strategies and possible topics for a course on the silviculture of MPTS, and more specifically, for a module integrating relevant social science knowledge and skills.

**I. TITLE: SILVICULTURE**

**II. OBJECTIVE:**

Foresters must be able to create and maintain the kinds of forests that best fulfill established objectives for given tracts of land. Thus they must be proficient in the theory and practice of silviculture. Also, wildlife managers and soil and water conservationists frequently must manipulate vegetation to accomplish their objectives. Consequently they too must be proficient silviculturalists. Upon completion of this course the student should:

- i) Understand the theory underlying silvicultural practice.
- ii) Be familiar with the silvicultural characteristics of various important species and timber types in Nepal and with silvicultural systems applicable with these species and types.
- iii) Be able to perform various silvicultural operations including production of nursery stock, treatment of seed and direct seeding, planting, various intermediate cuttings such as thinning, pruning release, and various harvest cuttings such as clearcut, shelterwood and selection cuts.
- iv) Be able to organize and direct crews of workers for implementation of the above practices.
- v) Be capable of writing silvicultural prescriptions and developing silvicultural systems that will accomplish objectives of management on a given site.

**III. COURSE OUTLINE**

**% Time allocation**

Unit 1.	Introduction - Silviculture and its place in Renewable Natural Resource Management	5
Unit 2.	Artificial Regeneration	17
	2.1 Choice of species - Management and Ecological considerations	-
	2.2 Nursery operations	
	2.3 Site preparation - mechanical, chemical, fire (controlled farming)	
	2.4 Planting	
	2.5 Direct seeding/sowing	
	2.6 Protection of plantations and seed	
	2.7 Afforestation of difficult sites	



<b>Unit 3.</b>	<b>Forest Tree Improvement - Application of Genetics in Silviculture</b>	<b>10</b>
3.1	Review of Genetics	
3.1.1	Mendelian Inheritance	
3.1.2	Quantitative Inheritance	
3.2	Selection Approaches in Tree Improvement	
3.3	Seed Production Areas	
3.4	Seed Orchards	
3.4.1	Types: Clonal and Half-sib Orchards	
3.4.2	Establishment and Management	
3.4.3	Progeny Testing; Calculation of Heritability	
3.5	Hybrids in Forestry	
3.6	Provenance Tests	
<b>Unit 4.</b>	<b>Intermediate Operations</b>	<b>20</b>
4.1	Thinnings	
4.1.1	Effects on growth and yield	
4.1.2	Methods of Thinning - low, crown, selection and mechanical thinning	
4.1.3	Application of Thinning Timing, Regulation of Density	
4.2	Improvement and Salvage Operations	
4.3	Pruning and Lopping	
4.3.1	Natural Pruning	
4.3.2	Artificial Pruning and Lopping - effects upon the tree	
4.3.3	Tools and techniques of pruning	
4.3.4	Fodder, Fuelwood and other benefits	
4.4	Release Operations	
4.4.1	Cleanings and Liberation Cuttings	
4.4.2	Use of Chemicals	
<b>Unit 5.</b>	<b>Natural Regeneration - Reproduction Methods</b>	<b>15</b>
5.1	High-Forest Methods	
5.1.1	Clearcutting	
5.1.2	Seed-Tree	
5.1.3	Shelterwood	
5.1.4	Selection	
5.2	Coppice and Coppice with standards	
5.3	Reproduction by Layering	
<b>Unit 6.</b>	<b>Formulation of Silvicultural Systems</b>	<b>8</b>
6.1	Identification of Objectives of Management	
6.2	Provision for Reproduction	
6.3	Provision for Efficient use of Growing space and productive Potential of the Site	
6.4	Control of Damaging Agencies	
6.5	Modification Required where sustained yield is an Objective of Management	
6.6	Optimum Use of Forest Capital	
6.7	Resolution of Conflicting Objectives	

Unit 7.	Social and/or Community Forestry	7
	7.1 Fuel, fodder and lumber needs	
	7.2 Other needs of mankind supplied by forests	
	7.3 Techniques for obtaining people's participation in setting objectives of management	
	7.4 Harmonizing conflicting objectives	
Unit 8.	Silvicultural systems Applicable to Important Timber types of Nepal	18
	8.1 Identification and Distribution of Important forest Types	
	8.2 For each type, in-depth study of:	
	8.2.1 Ecological Characteristics of Important Species Involved	
	8.2.2 Site Factors	
	8.2.3 Silvicultural Systems	

### PRACTICALS

Practical 1.	Seed Collection, Extraction and Storage	5
Practical 2.	Evaluation of Germinative Energy and Germinative Capacity of Collected Seed	10
Practical 3.	Production of Tree Seedlings from Seed Collected by Students	5
Practical 4.	Student Exercise in Direct Seeding	5
Practical 5.	Student Exercise in Planting	5
Practical 6.	Marking for Thinning	10
Practical 7.	Pruning Exercise	5
Practical 8.	Student Conducted Release Operation	5
Practical 9.	Marking for Shelterwood Cutting	10
Practical 10.	Marking for Selection Cut	10
Practical 11.	Marking for Coppice with Standards Cut	5
Practical 12.	Evaluation of Regeneration Success	5
Practical 13.	Formulation of Silvicultural System for a Given Tract	20

## TEXTS AND REFERENCES

### I. Texts:

1. Parkash, R. and I.S. Khanna. 1979. Theory and Practical Silvicultural Systems. Internal-Book Distributors, Dehradun.
2. Smith, D.M. 1962. The Practice of Silviculture. John Wiley and Sons, New York.

### II. References:

1. Armson, K.A. 1977. Forest Soils: Properties and Processes. University of Toronto Press.
2. Daniel, J.W., Helms, J. and F.S. Baker. 1979. Principles of Silviculture. McGraw-Hill, New York.
3. Kittredge, J. 1948. Forest Influences. McGraw-Hill, New York.
4. Kozlowski, T.T. and C.B. Ahlgren (eds.). 1974. Fires and Ecosystems. Academic Press, New York.
5. Troup, R.S. 1952. Silvicultural Systems, Edited by E.W. Jones. Oxford University Press, London.
6. Troup, R.S. 1975. Silviculture of Indian Forest Trees. 3 Volumes. Forest Research Institute Press, Dehradun.
7. Champion, H.G. and S.K. Seth. 1968. A Revised Survey of the Forest Types of India. Delhi, Manager of Publications.

**INCLUSION OF SOCIAL ASPECTS IN DIFFERENT SUBJECTS  
AT INSTITUTE OF FORESTRY**

**INTRODUCTION:**

Institute of Forestry has been established to produce lower level and middle level technicians in the area of Renewable Natural Resource Conservation and Management. It also conducts short term training in any of forestry disciplines (eg. Community Forestry Extension, Forest Utilization Techniques, Fodder Management and so on).

The Institute has been offering courses related to various disciplines of Natural Resource Management at Certificate level and B.Sc. level. These technicians have to look after not only the vast forest estate but also the human resource, which is getting increasingly involved in protection, production and development of forest resource. In order to work with persons of various background IOF has introduced some social aspects in different subjects at Certificate level and as well as B.Sc. level.

**OBJECTIVES**

The objectives for designing the courses are as follows:

1. The students should know how to take good and timely decisions.
2. The student should be able to organize and conduct meeting effectively.
3. The student should be able to work effectively with staff of other disciplines.

4. The student should be able to draw an extension program for a village.
5. The student should be able to deal with persons of various backgrounds and motivate them for the protection and development of forest management.

#### SUBJECT AND COURSE OUTLINE

1. Forest Management ( B.Sc. 3rd Yr. ) - only for general forestry.

Additionally, this subject has the following course on social aspects:

##### Unit 7: Social Environment of Forestry

7.1 Social values, public relation and public participation.

7.2 Marketing

7.3 Organization of the project

##### Unit 8: Case studies in Forest Management Planning

8.1 Community Forestry

8.2 Industrial Forestry

8.3 Wildlife and Recreation Management

8.4 Watershed and Soil Management

8.5 National Forest Management

2. Silviculture ( B.Sc. 3rd Yr. )

Additionally, this subject has also the following course on social aspect:

**Unit 7. Social and Community Forestry**

- 7.1 Fuel, fodder and lumber needs
- 7.2 Other needs of mankind supplied by forests
- 7.3 Techniques for obtaining people's participation in setting objectives of management
- 7.4 Harmonizing conflicting objectives

3. Watershed Management ( B.Sc. 3rd Yr.) only for soil cons.  
Additionally, this subject has also the following course on social aspect:

**Unit 8 Social and cultural consideration in watershed Mgt.**

- 8.1 Assessing social and cultural backgrounds
- 8.2 Determining social constraints to various management practices.
- 8.3 Evaluating strategies required to effect change in watershed management.

4. National Park Administration and Management ( B.Sc. 3rd Yr.)  
- only for wildlife management.

**Unit 6 Additional Management Policies.**

- 6.1 Fee collection
- 6.2 User survey
- 6.3 Insurance
- 6.4 Maintenance
- 6.5 Public relation - public participation

5. Human Resource Management ( B.Sc. 2nd Yr. )

Unit 1 Introduction to sociological approach in resource management.

1.1. Importance of social in resource management.

1.2. Brief account of resource history & hrief survey of  
Nepal.

Unit 2 Social Organization

2.1 Traditional groups ethnic and community study

2.2 Principles of social organization and the problems of  
social order.

2.3 Political, economic, and idological component of social  
organization

2.4 Language of social organization

2.5 Social control and ffreedom

2.6 Social change organization and modernization

Unit 3 Social Institution

3.1 Ethnicity and caste

3.2 Religion, norms, values and laws

3.3 Role and status of women

3.4 Customs governing resource management

Unit 4 Application of social principles to:

4.1 Economy and society

4.2 Resource Management

4.3 Production

4.4 Use of resources

4.5 Technological innevativeness

4.6 People participation and marginal integration

## **Unit 5 Extension**

**5.1 Principles, necessity**

**5.2 Secrets of success or causes of failures**

**5.3 Planning and drawing up an extension program, plan of work and calender or operations.**

**5.4 Agencies and methods of extension**

**5.5 Control and evaluation**

## **Unit 6 Interdisciplinary approach**

**6.1 Working with different agencies**

**6.2 Co-ordination**

**6.3 Maintaining leadership and coordination**

## **Unit 7 How to organize a meeting**

**7.1 Preparation of and delivering a Speech**

**7.2 How to talk effectively**

**7.3 Preparing for a change**

**7.4 Necessity of maintaining and good human relations**

## **Unit 8 Communication**

**8.1 Definations**

**8.2 Objectives**

**8.3 Principles for good communication**

**8.4 Barriers in communication**

**8.5 Communication system**

## **Unit 9 Motivation**

**9.1 Defination**

**9.2 Effective motivation**

**9.3 Role of incentives**



**For Certificate Level**

1. Silviculture ( C.L. 1st Yr. )

**Unit 7. Social Forestry**

2. Introduction of Extension work in RNR ( C.L.1st Yr.)

**Unit 1. Extension**

- 1.1 Introduction to extension work
- 1.2 Preliminary definition
- 1.3 Why extension work is necessary
- 1.4 Aims of extension principles governing extension activitye
- 1.5 Ladder of learning principles governing extension activity
- 1.6 Various methods used in extension work general
- 1.7 Mass methods
- 1.8 Group methods
- 1.9 Individual methods
- 1.10 Program planning
- 1.11 Understanding the people and their problems
- 1.12 Drawing up an questionnaire & conducting interview
- 1.13 Extension program
- 1.14 plan of work
- 1.15 Calender of operation
- 1.16 Qualities of an extension worker. His key role
- 1.17 Causes of failure of an extension program
- 1.18 Evaluation and its importance

- 1.19 How and when to do evaluation
- 1.20 Comprehensive definition of extension steps of success in extension work
- 1.21 Organization of extension work in a new area.

#### Unit 2 Communication

- 2.1 Communication what is it.
- 2.2 Use of senses - communication as a system
- 2.3 Benefits of understanding the people - Its importance in extension work.

#### Unit 3 Motivation

- 3.1 What is it - It's necessary
- 3.2 Ladder of needs
- 3.3 Factors governing motivation
- 3.4 What motivates men
- 3.5 Important, theories of motivation
- 3.6 Extension communication and motivation, essential links, in educating man.

### 3. Agriculture and rural sociology (C.L. 2nd Yr.)

Additionally, this subject has the following courses an social aspect:

#### Unit 5 Rural Sociology

- 5.1 The nature and characteristics of rural social system in general
- 5.2 Community health
- 5.3 Community welfare
- 5.4 Community education

## **Unit 6 Rural Economics**

- 6.1 Social economic power and its interaction with rural communities**
- 6.2 Exchange of goods, services and wealth**
- 6.3 Creation and distribution of wealth**
- 6.4 Self sufficiency and interdependence**
- 6.5 Role of natural resource conservation in community development**
- 6.6 Benefits**
- 6.7 Problems**

## **Unit 7 Migration**

- 7.1 Causes**
- 7.2 Its interaction with forest environment**

## **CONCLUSION**

**At the end of the course, it is hoped that the students will be able to manage the forest estate as well as work with persons of various background in their respective areas.**

**SECTION 6**

**CURRICULUM RESOURCES INVENTORY INSTRUMENT**

by  
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J. Kathy Parker  
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**NOTE: This is intended to be a working document. As it is tested and refined, it will be modified. We would like to encourage input into the process of making this a more useful document. Any comments, concerns, recommended additions should be forwarded to:**

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We would also appreciate receiving any reports or publications resulting from the application of this Curriculum Resources Inventory so that we can benefit from the information obtained and share it with our colleagues.  
Thank you.

## CURRICULUM RESOURCES INVENTORY INSTRUMENT

### Introduction

The Curriculum Resources Inventory Instrument is a tool for use in the evaluation of existing institutional and curricular resources, and for identification of some of the potential opportunities and constraints to curriculum revision and development. The instrument has been drafted with a number of fundamental questions in mind, including:

- o What information do we need to have?
- o Why do we want this information?
- o Who do we need to ask to obtain this information?
- o When and how often do we need to ask these questions?
- o How and by whom can the information be used?

Instruments such as this and other tools should be developed, adapted, and applied in efforts to plan, monitor, and evaluate forestry school curricula.

The following details are provided to help the reader/potential interviewer know what this document is, how it can be used, what outputs might be expected, who potential respondents might be, and what problems might arise during the application of the instrument.

#### A. Goals of the Curriculum Resources Inventory Instrument

1. to guide the inventory and evaluation of curriculum resources (e.g., people, processes, courses, materials) in forestry academic institutions, with special focus on opportunities and constraints to integrating the social sciences in forestry curricula.
2. to serve as one tool in the process of institutional self-evaluation and curriculum development and revision.

#### B. Objectives of the Curriculum Resources Inventory Instrument

1. to provide baseline information on the status of forestry educational programs and resources (e.g., context and demand for curriculum; curricular types, objectives, and content).
2. to provide guidelines on the kinds of information needed for understanding existing curricula (e.g., curriculum inputs, curriculum delivery).

3. to provide guidelines on the various sources of information about status and trends of curricular development within an institution (e.g., administrators, faculty, students, graduates).

Details are provided below for the application of the Curriculum Resources Inventory. The six sections of the Inventory are printed in different colors to facilitate their use. Note that this is a working document of the Inventory which will be tested and revised over time. Suggestions for improvements to the Inventory or these instructions are welcome.

#### C. Instructions on Application of the Curriculum Resources Inventory Instrument

1. Potential Users—The potential users of this Inventory tool include university personnel, external host country evaluators, and development experts.
2. Potential Respondents—It would be relatively time consuming for any one individual to answer all the questions for all of the sections of the Inventory. We have, therefore, identified the potentially most appropriate respondents for each set of questions in instruction B. for each section of the Inventory.
3. Potential Responses—Where specific details such as numbers of students are requested in answer to a question, it may be useful to provide respondents with a separate sheet outlining the questions so that they can provide those numbers at some agreed upon time after the interview has been conducted.

The Inventory Instrument has been consistently formatted to handle up to four listed answers (e.g., 1.1.1., 1.1.2., 1.1.3., 1.1.4.), though this number of answers need not be rigidly applied. If additional answer space is required, merely add more numbers so that the answers can be entered during the analysis phase of your effort.

You should work with your respondent to determine a timely reporting of the results of the instrument.

4. Potential Outputs--The Resources Inventory has been designed to serve a range of potential uses. Respondents should be informed of these uses for their answers to Resources Inventory questions.
  - a. Institutional Self-Evaluation by providing information for monitoring and evaluation of existing resources.

- b. Baseline Data Collection and Monitoring by providing a systematic outline for the collection of data about forestry programs/curricula in individual institutions. The data can later be used to monitor and evaluate changes in curriculum over time.
  - c. Regional Research Activities on Institutional Development by providing for comparison and contrast of forestry programs/curricula across the study region.
  - d. Technical Assistance in Institutional Development by identifying potential opportunities and constraints to enhance and/or modify forestry curricula.
5. Potential Problems in Application and Analysis of the Resources Inventory—It is difficult to predict the nature of problems that might arise during the application of this instrument, however, it is important to be aware of some potential problem areas which are outlined below.
- a. Time for Application
    - 1) It is essential to ensure that you have adequate time for the completion of relevant sections of the instrument.
    - 2) It is essential for your respondent to understand, in advance, the potential time requirements for the successful completion of the instrument to avoid inconveniences.
    - 3) This Inventory is divided into several sections for ease of application. It is a long document and may require the interviewer and interviewee to establish several meetings during which the instrument is applied. The interviewer should keep track of the time it takes to complete each section of the instrument. This should be provided to the instrument's designers so that they can update the information provided herein.
    - 4) The interviewer can apply one, several, or all sections of the inventory, depending upon information needs, time limitations, potential uses, etc.
    - 5) The actual data collection phase may take a long time depending on the number of respondents. This must be factored into the design and implementation of the activity.

- 6) Be prepared to give your respondent a copy of those questions that require quantitative answers. It would be useful to indicate, in advance, that this might happen, so that they might be able to have someone working to find the answers while you are interviewing the respondent. If questions are left with respondents, please ask them to keep track of the time that it takes to complete each section. This may prove useful in the future application of the instrument. Also, be sure to establish and agree upon a deadline for completion of the additional information.
- 7) Set up interviews well in advance and reconfirm your arrival.

b. Clarification of Purpose of Questions

- 1) While we hope that the purpose of each of the questions is self-evident, it may not be clear to the respondent. While it is better not to interrupt the flow of the questionnaire, the interviewer may have to interject clarifying statements to obtain the relevant information from the respondent. The interviewer, therefore, needs to be fully aware of the purposes and potential uses of the answers to instrument questions so that he/she knows when it is necessary to rephrase a question for a respondent.
- 2) It is important to notify university officials that this Curriculum Resources Inventory Instrument is being applied and that it will require discussion with a variety of administrators, faculty and others in the institution. This will help the officials understand that the instrument has questions that can best be answered by specific groups or individuals.
- 3) Many of the questions are close-ended. They may, however, elicit thoughts, reflections, or examples that can be "captured" in the margins of the instrument. These additions can provide the interviewer with richer detail and add depth to the analysis.

c. Issues of Confidentiality

- 1) We do not feel that the answers to this instrument need to be confidential.
- 2) If however, the interviewer agrees to the confidentiality of any or all answers, then that agreement should be binding.



- d. **Use of a Taperecorder**—The ease of recording information during the interview process can be facilitated by the use of a taperecorder. However, this can cause interviewees to be more cautious than they might otherwise. Never use a taperecorder without the permission of the interviewee.
  
- e. **Introduction of the Interviewer**—Interviewer will need to contact officials at the institution in advance to obtain permission to apply the instrument. If the interviewer is from outside the institution, this will require contacting officials at various levels as appropriate to each institution. A letter of introduction can be a useful document and should be obtained, as appropriate. Additionally, a letter from the interviewer detailing the objectives, anticipated time requirements, etc. should be sent to potential interviewees in advance of the first meeting.
  
- f. **Conclusion and follow-up**—At the end of each interview, try to provide the respondent with details on deadlines for additional information, follow-up discussions, schedule, etc. Specify the feedback that will be given to justify the investment of their time in responding.

**CURRICULUM RESOURCES INVENTORY INSTRUMENT**  
**Section 1**

**I. CURRICULUM DEVELOPMENT AND DECISIONMAKING PROCESS**

**Instructions for the Interviewer**

- A. Objectives of this section of the instrument:**
1. To obtain information about the curriculum development and decisionmaking process,
  2. To identify who makes decisions about curriculum development at the program level,
  3. To identify who makes decisions about curriculum development at the course level,
  4. To identify obstacles and opportunities in the existing curriculum development and decisionmaking process, and
  5. To identify mechanisms, obstacles, and opportunities for integrating the social sciences in forestry curricula and forestry in social science curriculum.
- B. Potential Respondents:**
1. University administrators (e.g., President, Vice President for Academic Affairs, Dean of Forestry Schools)
  2. Selected faculty (e.g., Heads of Departments, senior and junior faculty).
- C. Anticipated Time for Application of this Section of instrument:**  
2 hrs.
- D. Potential Application of Information Obtained:**
1. Description of nature of Curriculum Design Process
  2. Identification of opportunities for introduction of innovation
  3. Research on forestry education development
- E. Questions that might be given on separate sheets for elaboration before or after the interview: See question 14 if time does not permit it to be asked and answered in the allotted time frame.**
- F. Details for Application of this section of the instrument:**
1. An important distinction exists between the terms "program" and "course" curricula as used in this instrument. Program level is intended to cover a range of courses within an

academic program (i.e., at the College or Department level) while course level is intended to cover single courses where curriculum change might occur.

2. Please use charts or diagrams to outline the nature of the curriculum design process if these prove useful tools. However, it is important to keep in mind that text must accompany these diagrams in order for them to be useful to other readers or analysts.
3. For open-ended questions, try to take down as many examples as possible. This will make the reporting of results and analysis of the survey answers much richer and more interesting.

**CURRICULUM DEVELOPMENT AND DECISIONMAKING PROCESS**  
Interview Instrument

1. Which office or duly constituted body is primarily charged with forestry curriculum development functions?

<u>Level</u>	<u>Name of Office/Body</u>
1.1 Ministry Level	_____
1.2 University Level	_____
1.2.1. College Level	_____
1.2.2. Department Level	_____
1.2.3. Faculty Level	_____

2. If curriculum development is formalized or institutionalized at the institution/university level, have official criteria been established to guide the process?

Yes (obtain a copy if available)  
 No

3. What social, political, economic, environmental, or technological changes or problems usually lead to a demand for change in your curriculum? Please elaborate.

	<u>Changes</u>	<u>Curricular Changes</u>
3.1. Social		
3.1.1.	_____	_____
3.1.2.	_____	_____
3.1.3.	_____	_____
3.1.4.	_____	_____
3.2. Political		
3.2.1.	_____	_____
3.2.2.	_____	_____
3.2.3.	_____	_____
3.2.4.	_____	_____

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Changes

Curricular Changes

3.3. Economic

3.3.1.	_____	_____
3.3.2.	_____	_____
3.3.3.	_____	_____
3.3.4.	_____	_____

3.4. Environmental

3.4.1.	_____	_____
3.4.2.	_____	_____
3.4.3.	_____	_____
3.4.4.	_____	_____

3.5. Technological

3.5.1.	_____	_____
3.5.2.	_____	_____
3.5.3.	_____	_____
3.5.4.	_____	_____

3.6. Others

3.6.1.	_____	_____
3.6.2.	_____	_____
3.6.3.	_____	_____
3.6.4.	_____	_____

4. How does your institution respond to needs or demands for curricular change?

4.1. Apply new curriculum developed by Ministry of Education or other body?

_____	Yes
_____	No

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4.2. Request new curriculum be developed by Ministry of Education or other body?

\_\_\_\_\_ Yes  
\_\_\_\_\_ No

4.3. Request permission to develop new curriculum?

\_\_\_\_\_ Yes  
\_\_\_\_\_ No

4.4. Develop new curriculum without requesting permission?

\_\_\_\_\_ Yes  
\_\_\_\_\_ No

4.5. Form Ad Hoc Committee(s) or establishment of Special Task Forces?

\_\_\_\_\_ Yes  
\_\_\_\_\_ No

4.6. Hire specialists or consultancy groups?

\_\_\_\_\_ Yes  
\_\_\_\_\_ No

4.6.1. Through funding from the government?

\_\_\_\_\_ Yes  
\_\_\_\_\_ No

4.6.2. Through external funding?

\_\_\_\_\_ Yes  
\_\_\_\_\_ No

4.7. Others, please specify

\_\_\_\_\_  
\_\_\_\_\_

5. Describe the general process by which curricular changes are operationalized/effected in your institution? (NOTE: A Flow Chart can be a useful tool to help describe the process. However, a description with words needs to accompany it.)

5.1. Actions to initiate and complete curriculum change? (e.g., Ministerial decree, response to evaluation report, forest bureaucracy request, demands by student body)

Program Level

Course Level

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

5.1.1. Are there variations on this process?

\_\_\_\_\_ Yes  
\_\_\_\_\_ No

5.1.2. If yes, what explains the variations?

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

5.2. Sequence of action for process of curriculum change? (i.e., What comes first, second, etc.?). This should refer to the typical/normal process of curriculum change.

Program Level

Course Level

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

5.2.1. Approximately how long does it take to complete the whole process?

\_\_\_\_\_

5.2.2. Approximately how long does it take to complete each step in the process?

\_\_\_\_\_

6. What is the range of potential changes to existing program curriculum that can occur? (e.g., abolition or incorporation of new courses, modification of curricular objectives, etc.?) Ask the interviewee to provide examples to illustrate the potential changes.

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

6.1. Which potential changes are more common than others?

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

7. What is the range of potential changes to existing course curriculum that can occur? (e.g., integration of new concepts, addition of new reading materials, etc.)

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7.1. What degree of flexibility does a faculty member have in initiating and implementing change in course curricula?

Great                      Moderate                      Little

8. Who makes final decisions involving the nature and content of program curriculum for your institution?

8.1. Sole responsibility of a constituted authority/body?

\_\_\_\_\_ Yes  
\_\_\_\_\_ No

8.2. If "yes", please specify which authority/body.

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8.3. Task of Committee or Task Force?

\_\_\_\_\_ Yes  
\_\_\_\_\_ No

8.4. If "yes", please provide details on:

8.4.1. Composition of Committee (disciplines, backgrounds (e.g., faculty, administrators) -

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8.4.2. How are they selected?

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8.4.3. Who selects them?

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8.5. Others; please specify

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9. Do decisionmakers/decisionmaking groups receive input from other sources (i.e., from faculty, students, etc.) outside the immediate office or group?

Yes  
 No

9.1. If "yes", please specify and identify the roles and responsibilities of each in the process

9.1.1. Agent	<u>Role</u>	<u>Responsibility</u>
Administrators		<hr/>
University President/ Chancellor/Vice President for Academic Affairs (specify)		<hr/>
Dean		<hr/>
Department Head		<hr/>
Senior Faculty		<hr/>
Junior Faculty		<hr/>
Students		<hr/>
Employers		<hr/>
Alumni		<hr/>
Others, specify		<hr/>

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10. By what mechanisms are views of outside sources obtained by the decisionmaking authority, including assessment of need and demand?

10.1. Expressed or articulated?

- 10.1.1. \_\_\_\_\_ Survey
- 10.1.2. \_\_\_\_\_ Informal discussion
- 10.1.3. \_\_\_\_\_ Formal meetings, i.e. Seminars and Workshops
- 10.1.4. \_\_\_\_\_ Consultations
- 10.1.5. \_\_\_\_\_ Others, specify

11. Who makes final decisions regarding changes in course content in your institution?

11.1. Faculty member responsible for teaching course?

\_\_\_\_\_ Yes  
\_\_\_\_\_ No

11.2. If "yes", do they receive input from outside sources?

\_\_\_\_\_ Yes  
\_\_\_\_\_ No

11.3. If "yes", specify

\_\_\_\_\_  
\_\_\_\_\_

11.4. Does the institution officially encourage or require them to seek outside input?

\_\_\_\_\_ Yes  
\_\_\_\_\_ No

11.5. If "yes", what is the source of the encouragement or requirement?

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

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12. What are the principal obstacles and opportunities to curriculum change at the program level and the course level?

Program Level

Course Level

Obstacles

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Opportunities

13. What are the principal obstacles and opportunities in the existing curriculum development and decisionmaking process to the integration of the social sciences in forestry curriculum and to integrating forestry in social science curriculum?

13.1. Obstacles to integrating the social sciences in forestry curriculum?

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13.2. Opportunities to integrating the social sciences in forestry curriculum?

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13.3. Obstacles to integrating forestry in the social science curriculum?

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13.4. Opportunities to integrating forestry in the social sciences?

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14. What is the history of this process of curriculum development? (i.e., when was it started, has it changed much over time, how has it changed, when did changes take place, what have the reasons been for changes in the process, etc.?) (NOTE: If an article or report has been written on this subject, you might ask for additional details or dissenting views by the respondent rather than trying to obtain all of the details. If they are not familiar with the report, you might want to obtain the details from the respondent. This could be a very time-consuming part of the interview, so a decision must be made about exactly how useful this information will be to the needs of the evaluator.)

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(Time taken to complete this section of the Curriculum Resources Inventory Instrument \_\_\_\_\_)

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**CURRICULUM RESOURCES INVENTORY INSTRUMENT**  
**Section 2**

**II. NATURE AND STRUCTURE OF THE CURRICULUM**  
**Instructions for the Interviewer**

**A. Objectives of this section of the instrument:**

1. To look more directly at the existing curriculum, including technical forestry and social science courses, both in the forestry program and in other departments or programs within the institution,
2. To clarify the objectives of each course, especially focusing on the social science objectives of both technical forestry and social science-related courses,
3. To identify the extent to which certain issues and interest groups (e.g., landless) are reflected in the existing curriculum, and
4. To discuss the level of emphasis placed on specific learning outcomes or objectives.

**B. Potential Respondents:**

1. University administrators (e.g., President, Vice President for Academic Affairs, Deans of Forestry School or of College where social science curriculum is taught)
2. Selected Faculty (e.g., Heads of Departments, senior and junior faculty).

**C. Anticipated time for Application of this section of the instrument: 1 hour and 30 minutes.**

**D. Potential Application of Information Obtained:**

1. Description of nature and structure of existing curriculum—provides baseline information for monitoring curricular change over time
2. Identification of opportunities for introduction of innovation in courses, enhancement of facilities and resources available to faculty and students, and/or opportunities available across an institution that might be tapped
3. Research on the nature of the learning process in forestry and social science programs.

**E. Questions that might be given on separate sheets for elaboration before or after the interview: The interviewer should obtain a**

copy of the existing curriculum in advance and do analysis described in F.1. below.

F. Details for Application of this section of the instrument:

1. Much of the information to be gathered in this section can be obtained through a review of the existing course catalogues and other forestry program documentation. The purpose of the interview would be to fill in any remaining gaps or to clarify certain points. Selective application of this section of the instrument is advised.
2. It will be important for the interviewer to do an in-depth analysis of the existing curriculum in advance of the interview if at all possible. If this is not done, the actual application of this section will be difficult at best and very lengthy at worst for the respondent who will have to provide all of the details. The pre-analysis should cover questions 1-3 below insofar as possible.
3. This section also provides the interviewer with the opportunity to expand the interview to other departments and programs (e.g., social science departments). It should be made clear to university officials, in advance, that this will be done in order to avoid problems.

**NATURE AND STRUCTURE OF THE CURRICULUM**  
**Interview Instrument**

1. What types of curriculum do you offer in your institution that relate specifically to forestry?

1.1. BS Forestry (General)

\_\_\_\_\_ Yes  
\_\_\_\_\_ No

1.2. BS Forestry with Specialization

\_\_\_\_\_ Yes  
\_\_\_\_\_ No

1.3. If "yes", please list the areas of specialization

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

1.4. MS Forestry (General)

\_\_\_\_\_ Yes  
\_\_\_\_\_ No

1.5. MS Forestry with Specialization

1.6. If "yes", please list the areas of specialization

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

1.7. MF

\_\_\_\_\_ Yes  
\_\_\_\_\_ No

1.8 Ph.D.

\_\_\_\_\_ Yes  
\_\_\_\_\_ No

1.9 Other, please specify

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1.10 Please list courses by degree each year

1.11 What rules and regulations are placed on admissions of students for each degree?

1.11.1. Ph.D

1.11.2. H.F./M.Sc.

1.11.3. B.S.

2. What are the objectives of the various courses in your curriculum/curricula? (NOTE: Again, this should be determined initially through a review of course catalogues, etc.)

<u>Program</u>	<u>Courses</u>	<u>Objectives</u>
2.1. BS Forestry		
2.1.1. General Requirements		
2.1.1.1.	_____	
2.1.1.2.	_____	
2.1.1.3	_____	
2.1.1.4	_____	
etc.		
2.1.2. Technical Forestry		
2.1.2.1.	_____	
2.1.2.2.	_____	
2.1.2.3.	_____	
2.1.2.4.	_____	
etc.		
2.1.3. Social Science		
2.1.3.1.	_____	
2.1.3.2.	_____	
2.1.3.3.	_____	
2.1.3.4.	_____	
etc.		

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2.2. MS/MF/Ph.D.

2.2.1. Technical Forestry

2.2.1.1.

2.2.1.2.

2.2.1.3.

2.2.1.4.

etc.

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2.2.2. Social Science

2.2.2.1.

2.2.2.2.

2.2.2.3.

2.2.2.4.

etc.

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2.3. Refer back to the technical forestry courses listed in 2.1.2. Please identify any social science objectives that are covered by these technical courses. Identify the proportion of the technical forestry course that covers social science topics. Identify the nature of the social science coverage.

<u>Course</u>	<u>Social Science Objectives</u>	<u>Proportion Soc. Sci.</u>	<u>Nature of coverage</u>
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Are courses in other departments or colleges accessible to your students? (e.g., rural sociology, agricultural economics, extension)

\_\_\_\_\_ Yes  
\_\_\_\_\_ No

3.1. If "yes", please specify what courses in other departments or colleges of your institution are accessible and in which department they are located.

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3.2. How applicable are each of these to the preparation of your students for their profession?

<u>Course</u>	<u>Level of Applicability</u>		
	Very	Moderate	Little/None

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3.3. What are the major obstacles for students to take courses in other programs?

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To what extent are the following issues/interest groups reflected in the objectives and content of your curriculum/curricula?

Interest Groups/Issues

Level of Consideration  
 Very much Moderate None

4.1. Ethnic Groups  
 (Specify)

4.1.1. \_\_\_\_\_  
 4.1.2. \_\_\_\_\_  
 4.1.3. \_\_\_\_\_  
 4.1.4. \_\_\_\_\_

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Interest Groups/Issues

Level of Consideration  
Very much Moderate None

4.2. Religious Groups  
(Specify)

- 4.2.1. \_\_\_\_\_
- 4.2.2. \_\_\_\_\_
- 4.2.3. \_\_\_\_\_
- 4.2.4. \_\_\_\_\_

_____
_____
_____
_____

4.3. Women

4.4. Landless

4.5. Rich farmers

4.6. Resource poor

4.7. Others (specify)

- 4.7.1. \_\_\_\_\_
- 4.7.2. \_\_\_\_\_
- 4.7.3. \_\_\_\_\_
- 4.7.4. \_\_\_\_\_

_____
_____
_____
_____
_____
_____
_____
_____

5. In what ways are these issues/interest groups addressed within your courses? (e.g., field trips, discussions, readings, report writing)  
(NOTE: Ask the respondent to provide examples if possible)

Course

Means of Addressing issues/interest groups

_____	_____
_____	_____
_____	_____
_____	_____

6. What level of emphasis does your curriculum give to the following learning outcomes/objectives?

Learning Outcomes

Level of Emphasis

High Medium Low None

6.1. Development of cognitive skills/abilities

6.1.1. Observing/perceiving social elements and processes

6.1.2. Reading

6.1.3. Contrasting and comparing social processes

6.1.4. Locating, gathering, and classifying information about people and resources

_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____

Learning Outcomes

Level of Emphasis

High Medium Low None

6.1.5. Interpreting maps, tables, charts, graphs, etc.	_____	_____	_____	_____
6.2. Developing communication and interpersonal skills				
6.2.1. Writing	_____	_____	_____	_____
6.2.2. Listening to people	_____	_____	_____	_____
6.2.3. Discussing	_____	_____	_____	_____
6.2.4. Working effectively with others	_____	_____	_____	_____
6.2.5. Empathizing	_____	_____	_____	_____
6.3. Developing value-expressive skills				
6.3.1. Clarifying personal values about people and natural resources	_____	_____	_____	_____
6.3.2. Presenting or expressing alternative or competing views	_____	_____	_____	_____
6.4. Developing critical analytical and problem-solving skills	_____	_____	_____	_____
6.4.1. Synthesizing information from a variety of experiences and sources	_____	_____	_____	_____
6.4.2. Formulating and testing hypotheses	_____	_____	_____	_____
6.4.3. Drawing inferences and making conclusions	_____	_____	_____	_____
6.4.4. Forming generalizations about people and resources	_____	_____	_____	_____

7. What level of emphasis do you give to testing or evaluating the following learning outcomes/objectives?

<u>Learning Outcome/ Objectives</u>	<u>Level of Evaluation Emphasis</u>			
	<u>High</u>	<u>Medium</u>	<u>Low</u>	<u>None</u>
7.1. Factual recall	_____	_____	_____	_____
7.2. Basic skills development	_____	_____	_____	_____
7.3. Critical/analytical thinking	_____	_____	_____	_____
7.4. Concepts formation	_____	_____	_____	_____
7.5. Value expression/ clarification.	_____	_____	_____	_____

8. What system of grading is used?

8.1. University graduation standards?

8.2. Department/degree graduation standards?

(Time taken to complete this section of the Curriculum Resources Inventory Instrument \_\_\_\_\_)

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CURRICULUM RESOURCES INVENTORY INSTRUMENT  
Section 3

III. PRIMARY USERS OF CURRICULUM  
Instructions for the Interviewer

- A. Objectives of this section of the instrument:
1. To identify the nature of the users (faculty and students) of the curriculum, and
  2. To provide insights into the potential needs/demands of these users.
- B. Potential Respondent:
1. Registrar or School Secretary
- C. Anticipated Time for Application of this section of the instrument: 3 hours to prepare information requested; 1 hour for clarification of information if necessary.
- D. Potential Application of Information Obtained:
1. Establishment of a baseline of information about the nature of the users of the curriculum to be monitored over time.
  2. Identification of opportunities to meet needs and demands of users.
- E. Questions that might be given on separate sheets for elaboration before the interview: The whole set of questions in this section should be provided in advance of the interview. These questions primarily require quantitative answers that can be provided by the school registrar or other person(s) assigned by a university official (e.g., Dean).
- F. Details for Application of this section of the instrument:
1. When the appropriate respondent is identified, the interviewer will go through each question with him/her. The purpose is to clarify the nature of the answer that is being requested.
  2. The interviewer should provide the respondent with at least two copies of the questions--one set can be used as an informal worksheet; the other can serve as the final form.

3. Upon receipt of the completed section from the respondent, the interviewer should review the information provided and identify answers that need to be clarified or expanded upon. The interviewer should then work with the respondent to obtain this additional information, clarification, etc.
4. Every effort should be made to obtain sex-disaggregated information in this section.
5. In the questions about origins (i.e., rural and urban), it will be important to provide guidelines to the interviewee. Using the national definitions of what constitutes a rural vs. urban area is essential. This may be one point to clarify with the interviewee after reviewing the information that they have provided. Whenever a question arises about whether the student is from a rural or urban area, the interviewee should identify the name of the town and the interviewer should try to assist in obtaining information about its size in order to answer this portion of the instrument.



**PRIMARY USERS OF CURRICULUM**  
**Interview Instrument**

**Faculty**

1.1. Total number of faculty in the forestry program.

\_\_\_\_\_

1.2. Total number of adjunct, visiting, or other faculty who work in some official way with the program.

\_\_\_\_\_ Adjunct faculty  
\_\_\_\_\_ Visiting faculty  
\_\_\_\_\_ Others with formal arrangement  
(Please specify, e.g., department they work with,  
institution, etc.)

1.3. Names of other departments or colleges where students take courses and name of contact person in those departments or colleges.

<u>Department</u>	<u>Contact</u>
_____	_____
_____	_____
_____	_____
_____	_____

1.4. How is your permanent faculty distributed by fields of specialization (e.g., silviculture, genetics, social forestry). Please list under the following headings:

1.4.1. Identification number or initials (no names required)

1.4.2. Specialization

1.4.3. Degrees held, including dates received & awarding institutions.

1.4.4. Year began working at this institution

1.4.5. Titles of representative publications (i.e., a representative selection of most recent examples)

1.4.6. Titles of representative research projects (i.e., a representative selection of most recent examples)

1.4.7. Titles of all courses presently responsible for (please include all courses, even team taught courses)

1.5. How is your adjunct faculty distributed by fields of specialization?

<u>Specialization</u>	<u>Distribution</u>	
	<u>Number</u>	<u>% of Women</u>
_____		
_____		
_____		

2. Students

2.1. Number of applicants to your program for past five years?

	<u>Total</u>					<u>% of Women</u>				
	<u>198_</u>	<u>198_</u>	<u>198_</u>	<u>198_</u>	<u>198_</u>	<u>198_</u>	<u>198_</u>	<u>198_</u>	<u>198_</u>	<u>198_</u>
BS	_____	_____	_____	_____	_____	_____	_____	_____	_____	_____
MS	_____	_____	_____	_____	_____	_____	_____	_____	_____	_____
MF	_____	_____	_____	_____	_____	_____	_____	_____	_____	_____
Ph.D.	_____	_____	_____	_____	_____	_____	_____	_____	_____	_____

2.2. Origin (rural vs. urban) of Students over past 5 years?

	<u>Total Urban</u>					<u>Total Rural</u>				
	<u>198_</u>	<u>198_</u>	<u>198_</u>	<u>198_</u>	<u>198_</u>	<u>198_</u>	<u>198_</u>	<u>198_</u>	<u>198_</u>	<u>198_</u>
BS	_____	_____	_____	_____	_____	_____	_____	_____	_____	_____
MS	_____	_____	_____	_____	_____	_____	_____	_____	_____	_____
MF	_____	_____	_____	_____	_____	_____	_____	_____	_____	_____
Ph.D.	_____	_____	_____	_____	_____	_____	_____	_____	_____	_____

197.

2.2.1. Number of women who have rural origins.

\_\_\_\_\_

2.2.2. Number of women who have urban origins.

\_\_\_\_\_

2.3. For those students entering the program for higher degrees, please identify where they obtained their earlier degrees.

<u>Degree Program</u>	<u>Source of Previous Degrees</u>
_____	_____
_____	_____
_____	_____
_____	_____

Time taken to complete this section of the Curriculum Resources Inventory  
Instrument \_\_\_\_\_)

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**CURRICULUM RESOURCES INVENTORY INSTRUMENT**  
**Section 4**

**IV. LEARNING AND OTHER RESOURCES**

**Instructions for the Interviewer**

- A. Objectives of this section of the instrument:**
1. To serve as an inventory of existing learning and support resources,
  2. To determine the adequacy of these resources, and
  3. To identify opportunities and constraints for enhancement of these resources.
- B. Potential Respondents:**
1. University administrators
  2. Faculty
  3. Support personnel
- C. Anticipated Time for Application of this section of instrument:**  
1 hour, 30 minutes for personal interviews; 3 hours for support personnel response and followup for clarification.
- D. Potential Application of Information Obtained:**
1. Provide a baseline of information for monitoring over time.
  2. Indication of potential equipment needs during design phase of institutional development projects.
- E. Questions that might be given on separate sheets for elaboration before or after the interview: See question 15.**
- F. Details for Application of this section of the instrument:**
1. This section requires a subjective evaluation by administrators and faculty of the adequacy of their resources. It also requires that quantitative figures be obtained about the actual resources that are available. A person appointed by a university official should be able to collect this information.
  2. The interviewer must determine the number of people who can/should be interviewed to obtain the information required. It may be possible to interview all faculty and get the same kind of information from each. Or it may be possible to limit the survey to a selected sample of individuals. This decision needs to be based on the amount of time available, the kind of verification that is requested, permission from institutional administrators, etc.

**LEARNING AND OTHER RESOURCES**  
**Interview Instrument**

1. Please assess the adequacy of the following learning resources at your institution. (NOTE: NA below means "not available")

Level of Adequacy  
High Medium Low NA

- |   |       |
|---|-------|
| 1.1. Range of faculty specializations                                 | _____ |
| 1.2. Student/faculty ratio<br>(i.e., High s/f ratio=<br>low adequacy) | _____ |
| 1.3. Faculty teaching skills  | _____ |
| 1.4. Number of classrooms   | _____ |
| 1.5. Size of classrooms   | _____ |
| 1.6. Number of laboratories   | _____ |
| 1.7. Size of laboratories   | _____ |
| 1.8. Teaching aids:   |       |
| 1.8.1.Lab equipment   | _____ |
| 1.8.2.Overhead projectors   | _____ |
| 1.8.3.Slide projectors  | _____ |
| 1.8.4.Tape recorders  | _____ |
| 1.8.5.Video machines  | _____ |
| 1.8.6.Other audio-visual<br>equipment                                 | _____ |
| 1.8.7.Computers   | _____ |
| 1.8.8.Others (specify)  |       |
| _____   | _____ |
| _____   | _____ |
| _____   | _____ |

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Level of Adequacy  
High Medium Low NA

**1.9. Teaching materials maintained and used by professors:**

- 1.9.1. Books \_\_\_\_\_
- 1.9.2. Monographs \_\_\_\_\_
- 1.9.3. Manuals \_\_\_\_\_
- 1.9.4. Periodicals/journals \_\_\_\_\_
- 1.9.5. Research Reports \_\_\_\_\_
- 1.9.6. Others (specify)  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

**1.10. Library facilities:**

- 1.10.1. Space \_\_\_\_\_
- 1.10.2. Books \_\_\_\_\_
  - 1.10.2.1. Silviculture \_\_\_\_\_
  - 1.10.2.2. Ecology \_\_\_\_\_
  - 1.10.2.3. Research methods \_\_\_\_\_
  - 1.10.2.4. Social science \_\_\_\_\_
  - 1.10.2.5. Economics \_\_\_\_\_
  - 1.10.2.6. Policy \_\_\_\_\_
  - 1.10.2.7. Extension \_\_\_\_\_
  - 1.10.2.8. Soils \_\_\_\_\_
  - 1.10.2.9. Range \_\_\_\_\_

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Level of Adequacy  
High Medium Low NA

1.10.2.10.Others (specify)

_____	_____
_____	_____
_____	_____

1.10.3.Periodicals/journals

\_\_\_\_\_

1.10.4.Microfilms/fiche

\_\_\_\_\_

1.10.5.Research reports

\_\_\_\_\_

1.10.6.Maps

\_\_\_\_\_

1.10.7.General references

\_\_\_\_\_

1.11.Additional Learning Resources:

1.11.1.Research Centers in country  
(please specify)

_____	_____
_____	_____
_____	_____

1.11.2.Other libraries (specify)

_____	_____
_____	_____
_____	_____

1.11.3.National agencies with  
forestry and/or social  
science expertise

_____	_____
_____	_____
_____	_____

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Level of Adequacy  
High Medium Low NA

1.11.4. Donors with forestry  
 and/or social science  
 expertise


1.11.5. Other learning resources  
 available in the country


2. Major Learning Resource needs in priority ranking.

<u>Need</u>	<u>Priority</u>

3. If Learning Resources are inadequate or non-existent, what sources might be tapped to improve the quality and/or quantity of available resources?

3.1. Internal (national) sources


3.2. External (foreign) sources


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Please assess the adequacy of the following Support Resources at your institution.

Level of Adequacy  
High Medium Low NA

4.1. Support personnel:

4.1.1. Numbers

\_\_\_\_\_

4.1.2. Skills

\_\_\_\_\_

4.2. Dormitory facilities

\_\_\_\_\_

4.3. Vehicles for field trips

\_\_\_\_\_

4.4. Petrol for field trips

\_\_\_\_\_

4.5. Per diem expenses

\_\_\_\_\_

4.6. Field equipment:

4.6.1. Tents

\_\_\_\_\_

4.6.2. Backpacks

\_\_\_\_\_

4.6.3. Other (specify)

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

4.7. Typewriters

\_\_\_\_\_

4.8. Photocopy machines

\_\_\_\_\_

4.9. Printing machines

\_\_\_\_\_

4.10. Computers

\_\_\_\_\_

4.11. Telephones

\_\_\_\_\_

4.12. FAX

\_\_\_\_\_

4.13. Telex

\_\_\_\_\_

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Level of Adequacy  
High Medium Low NA

4.14. Others (specify)


5. Major Support Resource needs in priority ranking.

<u>Need</u>	<u>Priority</u>

6. If Support Resources are inadequate or non-existent, what sources might be tapped to improve the quality and/or quantity of available resources?

6.1. Internal (national) sources


6.2. External (foreign) sources


7. How would you assess the adequacy of Financial Resources for your institution?

Level of Adequacy  
High Medium Low NA

7.1. To meet educational objectives	
7.2. To support students	

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Level of Adequacy  
High Medium Low NA

- 7.2.1. Student assistantships \_\_\_\_\_
- 7.2.2. Fellowships/scholarships \_\_\_\_\_
- 7.2.3. Internships \_\_\_\_\_
- 7.2.4. Others (specify)  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

- 7.3. Salaries for faculty \_\_\_\_\_
- 7.4. Salaries for administrators \_\_\_\_\_
- 7.5. Salaries for support personnel \_\_\_\_\_
- 7.6. To purchase books \_\_\_\_\_
- 7.7. To purchase equipment \_\_\_\_\_
- 7.8. To maintain all facilities \_\_\_\_\_
- 7.9. To maintain all equipment \_\_\_\_\_

8. Percent of all students who receive financial support.

\_\_\_\_\_

8.1. Percent of all students receiving financial support who are women.

\_\_\_\_\_

8.2. Percent of all women students receiving financial support.

\_\_\_\_\_

9. Facilities, activities, financial support, etc., for women students that need additional funding.

\_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

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10. Major Financial Resource needs in priority ranking.

<u>Need</u>	<u>Priority</u>
_____	_____
_____	_____
_____	_____
_____	_____

11. If Financial Resources are inadequate or non-existent, what sources might be tapped to improve the quality and/or quantity of available resources?

11.1. Internal (national) sources

\_\_\_\_\_

\_\_\_\_\_

11.2. External (foreign) sources

\_\_\_\_\_

\_\_\_\_\_

12. How would you assess the adequacy of Incentives Resources for the faculty in your institution?

Level of Adequacy  
High Medium Low NA

12.1. Advanced training and educational opportunities:

12.1.1. For all staff \_\_\_\_\_

12.1.2. For social science-related staff \_\_\_\_\_

12.2. Funding of sabbaticals \_\_\_\_\_

12.3. Twinning opportunities \_\_\_\_\_

12.4. Publications costs \_\_\_\_\_

12.5. Publications series \_\_\_\_\_

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Level of Adequacy  
High    Medium    Low    NA

- 12.6. Research funding \_\_\_\_\_
- 12.7. Training in improved teaching methods \_\_\_\_\_
- 12.8. Travel funds for conferences, seminars \_\_\_\_\_
- 12.9. Costs of new books \_\_\_\_\_
- 12.10. Continuing education programs \_\_\_\_\_
- 12.11. Others (specify)  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

13. Major Incentive Resource needs in priority ranking.

<u>Need</u>	<u>Priority</u>
_____	_____
_____	_____
_____	_____
_____	_____

14. If Incentives Resources are inadequate or non-existent, what sources might be tapped to improve the quality and/or quantity of available resources?

14.1. Internal (national) sources

\_\_\_\_\_  
 \_\_\_\_\_

14.2. External (foreign) sources

\_\_\_\_\_  
 \_\_\_\_\_

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15. The following questions require answers that can be provided at a later time. Please provide information as available. It would be helpful when indicating funding figures to indicate whether the primary source is national funds as compared to external (foreign) funds.

15.1. Student/faculty ratio (total)

15.2. Student/faculty ratio (by specialization)

15.3. Number of classrooms

15.4. Average size of class (ratio of students per class)

15.4.1. Range of sizes of classes (largest classes in terms of size and smallest in terms of size)

15.5. Number of laboratories

15.6. Major pieces of lab equipment

15.7. Number of overhead projectors

15.8. Number of slide projectors

15.9. Number of tape recorders

15.10. Number of video machines

15.11. Number of other audio-visual equipment

15.12. Number of computers for faculty use

15.13. Number of computers for student use

15.14. Number of computers for administrative use

15.15. Number of support staff

15.15.1. Librarians

15.15.2. Administrative staff

15.15.3. Drivers

15.15.4. Maintenance

15.15.5. Others (specify)

15.16. Size of library facility (descriptive measures such as space occupied, number of floors, number of stacks, etc. as available)

15.17. Total number of books (if readily available)

15.18. Number of books by specialization (if readily available)

15.18.1. Silviculture

15.18.2. Ecology

15.18.3. Research methods

15.18.4. Social science

15.18.5. Economics

15.18.6. Policy

15.18.7. Extension

15.18.8. Others (specify by category)

15.19. Number of periodicals/journals in biological sciences

15.20. Number of periodicals/journals in social sciences

15.21. Number of microfilms/microfiche

15.22. Number of research reports

15.23. Number of dormitory rooms for men

15.24. Number of dormitory rooms for women

15.25. Average number of students/dormitory room

15.26. Number of vehicles for field trips

15.27. Field equipment

15.27.1. Number of tents

15.27.2. Number of backpacks

15.27.3. Others (specify)

15.28. Average amount of per diem per student per year for field trips

15.29. Number of typewriters for administrative purposes

15.30. Number of photocopy machines

15.31. Number of printing machines

15.32. Others (specify)

- 15.33. Number of student assistantships per year by sex
- 15.34. Average amount for student assistantships
- 15.35. Number of fellowships per year by sex
- 15.36. Average amount for fellowships by sex
- 15.37. Number of interships per year
- 15.38. Average amount of money for internships by sex
- 15.39. Average annual library purchase of books (money spent)
- 15.40. Average annual equipment purchase for program (money spent)
- 15.41. Average annual maintenance budget (gross funds)
- 15.42. Average annual funding of sabbaticals (gross and/or per capita)
- 15.43. Average annual support of faculty publication (gross and/or per capita)
- 15.44. Average annual support for faculty research (gross and/or per capita)
- 15.45. Average annual support for student research (gross and/or per capita)
- 15.46. Average annual support for faculty training (gross and/or per capita)
- 15.47. Average annual support for faculty travel to conferences (gross and/or per capita)
- 15.48. Number of graduates over the life of the school (need date school began; details on years closed for any reason)

15.49. Number of graduates per year over the last five years

	<u>Year</u>	<u>Number Men</u>	<u>Number Women</u>
15.49.1.	198	_____	_____
15.49.2.	198	_____	_____
15.49.3.	198	_____	_____
15.49.4.	198	_____	_____
15.49.5.	198	_____	_____

(Time taken to complete this section of the Curriculum Resources Inventory Instrument \_\_\_\_\_)

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CURRICULUM RESOURCES INVENTORY INSTRUMENT  
Section 5

V. CURRICULUM DELIVERY: CONSTRAINTS TO AND OPPORTUNITIES FOR ENHANCING THE EDUCATION OF FORESTRY PRACTITIONERS

Instructions for the Interviewer

- A. Objective of this section of the instrument:
1. To identify constraints to and opportunities for enhancing the education of forestry practitioners.
- B. Potential respondents:
1. University administrators
  2. Selected faculty
  3. Former graduates of the institution
- C. Anticipated time for Application of this section of the instrument: 1 hour, 30 minutes
- D. Potential Application of Information Obtained:
1. Revision of existing curricula and/or design of future curricula.
  2. Identification of opportunities for introducing innovation into existing curriculum.
- E. Questions that might be given on separate sheets for elaboration before or after the interview: None.
- F. Details for Application of this section of the instrument:
1. This may be the most frustrating part of the interview. It assumes that opportunities for integrating new concepts, methods, and skills might exist; that respondents have already given thought to the subject; and that they are open to considering the opportunity to integrate these, including the social sciences. None of these assumptions may hold.
  2. On the other hand, this might be the most exciting part of the interviews because it provides the most opportunity for thought and creativity. The interviewer should be open and flexible.

CURRICULUM DELIVERY: CONSTRAINTS TO AND OPPORTUNITIES FOR  
ENHANCING THE EDUCATION OF FORESTRY PRACTITIONERS  
Interview Instrument

1. What are the major issues that forestry practitioners must address in your country today?

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1.1. At what level of priority would you place those with social implications?

\_\_\_\_\_ High

\_\_\_\_\_ Medium

\_\_\_\_\_ Low

2. Is this institution's forestry curriculum adequately preparing its students to address these issues?

\_\_\_\_\_ Yes

\_\_\_\_\_ No

3. If "yes", could some minor improvements still be made? Specify.

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4. If "no", please specify what improvements should be made to improve the teaching/learning experiences to enhance the overall quality or effectiveness of forestry graduates?

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5. What are the obstacles to making these improvements in the teaching/learning experience of your institution?

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6. What are the opportunities for making these improvements in the teaching/learning experience of your institution?

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7. If the institution currently provides any opportunities either through existing forestry courses or through complementary courses in the social sciences, do you find them useful in preparing graduates for their work?

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8. What courses or topics do you suggest be incorporated in the forestry curriculum to help better prepare future graduates in performing their tasks?

Forestry and related technical courses

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**Social science courses**

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**Courses that blend both**

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**8.1. What are the constraints to incorporating these courses or topics?**

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**8.2. What are the opportunities for incorporating these courses or topics?**

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**8.3. Are other faculties (e.g., social sciences) available to assist in the development or teaching of these courses or topics?**

\_\_\_\_\_ **Yes**

\_\_\_\_\_ **No**

**8.4. Are these other faculties being used as a resource?**

\_\_\_\_\_ **Yes**

\_\_\_\_\_ **No**

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8.5. If "no", please specify why.

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8.6. What opportunities exist to enhance these inter-faculty linkages?

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8.7. What obstacles exist to inhibit these inter-faculty linkages?

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9. What expertise/characteristics/skills do you want to see your graduates take with them when they leave this institution?

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10. Is there currently a job market for forestry graduates with training in the social sciences?

\_\_\_\_\_ Yes

\_\_\_\_\_ No

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11. Do you foresee an increasing job market for forestry graduates with training in the social sciences?

\_\_\_\_\_ Yes

\_\_\_\_\_ No

11.1. If "yes" to 11., in what time frame do you foresee this job market developing?

\_\_\_\_\_ Short term

\_\_\_\_\_ Medium term

\_\_\_\_\_ Long term

12. Is there currently a job market for social scientists with training in forestry?

\_\_\_\_\_ Yes

\_\_\_\_\_ No

12.1. With what institutions?

\_\_\_\_\_  
\_\_\_\_\_

13. Do you foresee an increasing market for social scientists trained in forestry?

\_\_\_\_\_ Yes

\_\_\_\_\_ No

13.1. If "yes" to 13., in what time frame do you foresee this job market developing?

\_\_\_\_\_ Short term

\_\_\_\_\_ Medium term

\_\_\_\_\_ Long term

13.2. Is the forestry program of this institution working with social science faculties to prepare social scientists for work in forestry?

\_\_\_\_\_ Yes

\_\_\_\_\_ No

13.3. If "yes" to 13.2., in what courses, special training activities, etc., is this program working with social science faculties?

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13.4. Can these arrangements be improved or increased?

\_\_\_\_\_ Improved

\_\_\_\_\_ Increased

13.5. How can these arrangements be improved or increased?

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(Time taken to complete this section of the Curriculum Resources Inventory instrument \_\_\_\_\_)

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**CURRICULUM RESOURCES INVENTORY INSTRUMENT**  
**Section 6**

**VI. JOB MARKET**

**Instructions for the Interviewer**

- A. Objectives of this section of the instrument:**
1. To identify the potential job market for forestry graduates. Special focus is placed on forestry graduates trained in the social sciences and social scientists trained in forestry.
- B. Potential respondents:**
1. Agency officials
  2. NGOs
  3. Private sector
  4. Donors
- C. Anticipated time for Application of this section of the instrument: 1 hour**
- D. Potential Application of Information Obtained:**
1. Identification of potential job market trends for future graduates.
  2. Revision of existing curricula or design of future curricula to prepare graduates for current or future job markets.
- E. Questions that might be given on separate sheets for elaboration before or after the interview: None.**
- F. Details for Application of this section of the instrument:**
1. Since this will be addressed to a principally non-academic audience, respondents should be given a complete introduction to the objectives, potential uses, etc., of the Curriculum Resources Inventory Instrument as a whole, and this section of the instrument in particular.
  2. In general, the same rules given for the application of the other sections of the instrument apply with this section (e.g., confidentiality, etc.).



**JOB MARKET**  
**Interview Instrument**

1. What is the name of your agency or organization?
  
2. Describe the main mandates, functions, and responsibilities of your organization?

3. Do you employ forestry graduates?

\_\_\_\_\_ Yes

\_\_\_\_\_ No

3.1. If "yes", how many? \_\_\_\_\_

4. What are the primary forestry and natural resource management issues that your organization must address?

Issue

Level of Priority

<u>Issue</u>	<u>Level of Priority</u>
_____	_____
_____	_____
_____	_____
_____	_____

4.1. At what overall level of priority would you place those issues with social implications?

\_\_\_\_\_ Low

\_\_\_\_\_ Medium

\_\_\_\_\_ High

5. How do you generally rate the technical skills of the forestry graduates that work for your organization?

\_\_\_\_\_ Low

\_\_\_\_\_ Medium

\_\_\_\_\_ High

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6. How do you generally rate the communication and participatory skills of the forestry graduates that work for your organization?

- \_\_\_\_\_ Low
- \_\_\_\_\_ Medium
- \_\_\_\_\_ High

7. What skill areas of your foresters generally need improvement?

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8. What kinds of courses/learning experience would you suggest be included or integrated into their forestry education to enhance their effectiveness?

Courses/Concepts

Examples

Forestry and related technical specialties

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Social Sciences

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Other disciplines

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Learning experiences

Examples

Memory/factual recall

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\_\_\_\_\_

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\_\_\_\_\_

Problem solving

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

Creative thinking

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

9. Do special kinds of employment opportunities exist for graduates who have focused some of their education on the social sciences?

\_\_\_\_\_ Yes

\_\_\_\_\_ No

9.1. Do you expect these opportunities to increase over the next 10 years, and if so, why?

\_\_\_\_\_ Yes      \_\_\_\_\_ No

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

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10. Do special employment opportunities exist for graduates in the social sciences who have focused some of their education on forestry training?

\_\_\_\_\_ Yes

\_\_\_\_\_ No

10.1. Do you expect these opportunities to increase over the next 10 years, and if so, why?

\_\_\_\_\_ Yes      \_\_\_\_\_ No

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10.2. What are the strengths of the social science graduates with whom you have worked?

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10.3. What are the weaknesses of the social science graduates with whom you have worked?

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10.4. What special training or education needs do social science graduates working in forestry have that should be addressed by academic institutions where they are educated (e.g., courses or topics they should study) in order to enhance their overall quality or effectiveness?

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- What interactions do you have with the academic programs which educate foresters and/or social scientists with training in forestry?

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11.1. Are these interactions adequate in number or depth?

\_\_\_\_\_ Yes

\_\_\_\_\_ No

- What opportunities do you feel exist to enhance the interactions between your agency/organization and forestry or social science students that might enhance their effectiveness as professionals in the future?

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12.1. What are the constraints to these interactions?

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12.2. What means might be used to overcome these obstacles?

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Time taken to complete this section of the Curriculum Resources Inventory instrument \_\_\_\_\_)

**SECTION 7**

**BIBLIOGRAPHY: SELECTED REFERENCES  
ON CURRICULUM DEVELOPMENT**

**Note:** This bibliography is representative of the available literature in curriculum development. It contains references for curriculum development in forestry and related programs at the university level, as well as general references on curriculum development. These selected publications have been compiled from a variety of sources including an Education Resources Information Clearinghouse (ERIC) search of the available literature on curriculum development in the English language, that was conducted by the Sterling Memorial Library at Yale University.

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