



## TABLE OF CONTENTS

|  |               |
|--|---------------|
| <b>I. Assignment and Accomplishments</b>                         | <b>4</b>      |
| <b>A. Assigned tasks and responsibilities</b>                    | 4             |
| <b>B. Implementation of assignments</b>                          | 6             |
| 1. RFA headquarter activities                                    | 7             |
| 2. Field activities and technical assistance                     | 9             |
| 3. Representation  | 10            |
| <b>C. Reporting activities</b>                                   | 10            |
| <b>D. Issues and constraints in AID support for LDC forestry</b> | 11            |
| <b>E. Recommendations of an operational nature</b>               | 14            |
| <br><b>II. AID Host Country Forestry Sector Profiles</b>         | <br><b>16</b> |
| <b>A. Profile of forest resources in Asia</b>                    | 18            |
| 1. Natural forest vegetation of tropical Asia                    | 18            |
| 2. The loss of forests and forest land conversion                | 21            |
| 3. Rebuilding the forest resource base                           | 24            |
| <b>B. Overview of forest policy and administration</b>           | 28            |
| <b>C. Assessment of forest development programs and progress</b> | 33            |
| <b>D. Foreign development assistance in forestry in Asia</b>     | 50            |
| <b>E. AID responsiveness and effectiveness</b>                   | 55            |
| <br><b>III. Future directions of forestry in Asia</b>            | <br><b>58</b> |
| <b>A. Trends in host country policies and programs</b>           | 58            |
| <b>B. Major issues and constraints in forestry development</b>   | 62            |
| <b>C. Opportunities for donor assistance</b>                     | 63            |
| <b>D. Recommendations for future AID program direction</b>       | 65            |

## Appendices

1. AID Projects with Forestry Focus or Forestry Components
2. Forestry Contacts
  - 2.1 Mission Special Interests in Forestry
  - 2.2 Address List of Useful Contacts in Forestry in Selected Asian Countries
  - 2.3 Foreign Development Assistance Agency Forestry Advisors
3. Foreign Development Assistance Activities in the Forestry Sector in Asia
  - 3.1 List of UNDP-assisted Forestry Projects in Selected Countries of the Asia & Pacific Region
  - 3.2 Analysis of World Bank Forestry Lending in Selected Asian Countries, 1974-1983
  - 3.3 An Outline of JICA Technical Cooperation in Forestry in Asia
  - 3.4 CIDA Forestry Projects in Asia
4. Selected References from the RFA Document Collection

## List o. Tables

1. List of Reports Prepared, 1982-1985
2. Area of Natural Woody Vegetation in Selected Asian Countries, 1980
3. Average Annual Rate of Plantation Establishment
4. Summary of AID Assistance to the Forestry Sector in Asia
5. Summary of UNDP-assisted Projects in Asia
6. Summary of World Bank Lending for Forest Development by Region, 1963-1983

**ACRONYMS AND ABBREVIATIONS**

|                   |   |
|-------------------|---|
| <b>AID</b>        | <b>Agency for International Development of the United States (generally referring to the organization as a whole)</b> |
| <b>CIDA</b>       | <b>Canadian International Development Agency</b>  |
| <b>FAO</b>        | <b>Food and Agriculture Organization of the United Nations</b>  |
| <b>FY</b>         | <b>Fiscal Year</b>  |
| <b>JICA</b>       | <b>Japanese International Cooperation Agency</b>  |
| <b>LDC</b>        | <b>Lesser developed countries</b>   |
| <b>RFA</b>        | <b>Regional Forestry Advisor for Asia, AID</b>  |
| <b>UNDP</b>       | <b>United Nations Development Programme</b>   |
| <b>USAID</b>      | <b>United States' Agency for International Development (generally referring to Missions and their activities)</b>     |
| <b>World Bank</b> | <b>Implementing agency of the International Bank for Reconstruction and Development (IBRD)</b>                        |

## **I. Assignment and accomplishments**

The post of AID Regional Forestry Advisor for Asia was a new position created within the Forest Resources Management Project (no. 936-5519; FY 80-88) under the Office of Forestry, Environment and Natural Resources in the Bureau of Science and Technology. The objective of creating this new position was to increase both the level and availability of direct assistance and expert advisory service to AID Missions in Asia for the development of the forestry components of their programs.

The establishment of the Forest Resources Management Project coincided with the growth in interest in forestry development worldwide and the development of forestry projects within the Asia Missions. Given the limited technical expertise within the AID staff at this time, especially at the Mission level, Missions lacked the capability not only to adequately design forestry projects including definition of problems, research required and technical expertise needed. The Forest Resources Management Project was designed to overcome these constraints. As the field implementation arm of this project, the Regional Forestry Adviser position was initiated to make technical assistance more readily available to the Missions within each region.

### **A. Assigned tasks and responsibilities**

The activities undertaken by the Regional Forestry Advisor spanned a broad range of tasks in accordance with the mandate to provide general support services in the field of forestry to the various USAID Missions in Asia as well as AID headquarters. In the words of the contract Scope of Services:

"The contractor shall provide general assistance in the field-of Forestry, Agroforestry, Watershed Management, Wood Energy and related natural resources under the direct supervision of the office of agriculture, USAID/ Indonesia, to USAID Missions within Asia. which shall

include the following:

(a) Provide assistance to USAID Asia Missions, and host country institutions through USAID Missions in the formulation, design, development, review and evaluation of policies, programs and projects in the context of forest management, research, education and extension;

(b) Participate, as requested by USAID Asia Missions and consistent with the individuals' specific technical qualifications, in delivery of short-term technical assistance to USAID Missions, to assist in formulating Mission CDSS's, in project preparation (PIDs and PPS) and evaluation, and in the organization and conduct of special studies, meetings and training courses, supporting Mission Programs and projects (including collaborative projects with Peace Corps).

(c) Advise USAID Asia Missions on the need for professional services outside contractor's own capabilities, assist in preparing scopes of work identifying candidates and appropriate institutional expertise, and forwarding well-defined requests for professional services to Asia/TR and through ST/FNR to the forestry support program in Washington, D.C.

(d) Develop and maintain information base and broad knowledge of current conditions and development trends in the field of forestry and natural resources in all AID Asia Mission countries, including technical and institutional capabilities regarding forestry management training, education, research, and extension, and an understanding of technical assistance capabilities of other Asia area development and research institutions.

(e) Establish and maintain contact with host country,

multilateral and bilateral, government and non-government agencies involved in forestry and related natural resources activities within Asia and represent AID as requested in national, regional and international meeting on forestry and natural resources.

(f) Assist USAID Asia Missions in identifying viable national and regional collaborative development and (page 02 of State 368687) research project opportunities among USAID Asia Missions, other donors and Peace Corps.

(g) Assist in review of research programs and research capabilities, especially in context of wood energy and agroforestry emphasis, of major forestry research institutes in Asia.

(h) Assist in promoting the exchange of relevant forestry technical information and research findings between countries in the Asia region and lend support to AID projects serving this objective.<sup>3</sup>

## B. Implementation of assignments

In the interpretation of this broad ranging mandate and implementation of the tasks set out in the terms of reference, priority was given to responding to the requests and the needs of the Missions. The objective was to encourage and support the Missions in projects designed to assist host governments in increasing the efficiency and effectiveness of their forestry programs. In accordance with Agency policy emphasis was given to addressing the problems of natural resource and environmental degradation and forestry development for the sustainable production of multiple forest products and services.

In line with the RFA's mandate to assist the Missions in activities related to forestry development, there also appeared the

responsibility to assist Missions in developing in-house capabilities through increasing Mission understanding of forestry issues and selected technical matters related to project implementation. To this end the RFA office served an important role as a channel of information on forestry and related subjects from numerous organizations around the world as well as AID headquarters in Washington, D.C.

In essence, therefore, the position of regional forestry advisor was one of a facilitator, a conduit of information, and an interpreter of Mission needs with regard to forestry, both to the Center and to the host country government agencies.

#### 1. RFA headquarter activities

The channeling of information proved to be one of the more important and appreciated activities of the RFA office headquarters. Information received from other offices, agencies and organizations was screened selectively copied and circulated to interested individuals and institutions.

Too often the forestry information disbursed from forestry sources is very broad ranging; what often happens is an information overload which results in nothing being read. The AID project officer, generally a non-forester, seldom has the time to sift through the information to sort the items of relevance. During a visit to any Mission, the RFA attempted to identify the special forestry-related interests and informational needs of Mission staff, especially with regard to project implementation. Subsequently, this interest was nurtured with the dispatch of documents which addressed these identified interests and needs. A topical distribution system was developed which focused on Mission interest. In addition, the RFA informed the Missions of information exchange networks, journals, newsletters and publications of interest to the Missions and encouraged them to develop their own information channels and linkages.

The RFA document collection was organized into three major categories: Country files; Institutional files and Subject files. In collecting forestry reference materials, emphasis was placed on those topics of specific interest to the Missions or the AID program as a whole, present or projected. Information linkages were established with groups in several countries apart from the US as relevant to AID activities and interests, especially with regard to forestry training and research. These files, containing publications and reports collected during field trips, received in the mail or purchased on behalf of the RFA office, have been left in the care of the Regional Environmental Officer, USAID, Jakarta.

In this context an effort was made to collect information from other donors active in forestry in the region. A list of USAID projects was prepared and distributed along with a copy of the AID Forestry Policy Paper with a cover letter requesting similar information from the other donors. Of the some dozen letters distributed, however, only four replies were received, from UNDP/FAO, CIDA ESCAP and JICA. Overall, donor cooperation has been found to be poor, but highly variable on an individual country basis.

In addition, it was the responsibility of the RFA to bring to the attention of the AID headquarters, the problems and needs of various Missions with regard to forestry activities and to assist in identifying possible avenues of assistance. Accordingly the RFA recommended for the consideration of AID headquarters several topics for research, technical assistance and operational programs. Table 1 listing the titles of various RFA reports gives an indication of some of the subjects so addressed.

Finally the RFA assisted as requested in the preparation and support of workshops and conferences including the AID ASIA Bureau/Asia Society forestry conference in Bangalore in 1982 and the ASEAN Seminar on Watershed Research in Jakarta in 1984.

8A

LIST OF REPORTS PREPARED, 1982-1985

| <u>Subject Matter</u>  | <u>Date</u>  |
|--|--------------|
| <b>A. TOPICAL MEMOS</b>  |              |
| - USAID Social Forestry Program, India: Observations and Recommendations   | July, 12 '82 |
| - Request for Assistance: Forestry Extension and Training Materials  | July, 14 '82 |
| - Critique of GAO Draft Report of Reforestation  | Aug. 17 '82  |
| - An Overview of Forestry Conditions in Indonesia and Opportunities for USAID involvement in Forestry Sector Development | Sep. 24 '82  |
| - Film Strip Projectors  | July 25 '83  |
| - Forestry Support Program   | Aug. 1983    |
| - FAO/Finland Training Course on Watershed Management  | Aug. 1983    |
| - Proposed Topics for Special Study  | Aug. 1983    |
| - Proposal for expert assistance to AID-assisted projects with agroforestry components involving <u>Leucaena</u> sp.     | Sep. 1983    |
| - Consultancy on rattan Production and Processing, Provincial Area Development Project                                   | Oct. 6, 1983 |
| - AID Forestry Activities in Asia  | Oct. 18 '83  |
| - Assistance to GOI in Assessment of the Damage due to Drought Fires in the Rainforests in Kalimantan                    | Nov. 4, 1983 |
| - Review Paper on Rangeland management   | Dec. 1983    |
| - Tree Seed Procurement and shipment   | Apr. 1 '84   |
| - Support for NCG's in Forestry Activities   | Apr. 6 '84   |
| - A Manual of Farm tree crops  | Apr. 6 '84   |
| - Wood Energy Development  | Apr. 6 '84   |
| - Establishment of the International Tropical Timber Organization  | Apr. 9 '84   |
| - IUFRO News and Biomass Energy Research   | Apr. 9 '84   |
| - Papers and Publications  | Apr. 9 '84   |
| - Proposal for Intra-Mission Bioenergy Network   | Apr. 12 '84  |
| - PL 480 Food Assistance for Forestry Activities   | May 12, '84  |
| - Forestry Reference Materials   | May 16, '84  |
| - Minor Forest Products  | June 8 '84   |
| - Dry Zone Hardwood Tree Species Trials  | June 8 '84   |
| - Private Sector Development Assistance in the Forestry  | July 2, '84  |
| - Tree Seed Procurement and Shipment   | July 6 '84   |
| - International Seminar on Forest Planning and Management, October 7 - November 5, 1984                                  | July 2, '84  |
| - Request for Assistance: Forestry Extension and Training Materials  | July 14 '84  |
| - FSP Support of Foreign Students  | July 24 '84  |
| - Forestry Reference Materials   | Aug. 15 '84  |
| - Participant on Professional Forestry Women in the 9th Forestry Congress, Mexico July, 1985                             | Sept. 10 '84 |
| - Profiles of U.S. Forestry Schools & Consortia  | Sept. 10 '84 |
| - USDA/Forest Service Research program   | Sept. 10 '84 |

- **AID/W Support for Sabbatical and Graduate Forestry Studies in LDC's (AID host countries only)** **Jan. 18 '85**

**B. TRIP REPORTS**

- **Washington, D.C.** **Jan. 13 - March 16 '84**
- **Sri Lanka** **April 4-14 '82**
- **Philippines** **May 1-19 '82**
- **India** **June, 1982**
- **Indonesia (Timor & Flores )** **Oct. 4-11 '82**
- **Nepal** **Dec. 6-10 '82**
- **Washington, D.C.** **Jan. 1983**
- **Philippines** **March, 1983**
- **Thailand** **March, 1983**
- **Bangladesh** **June 1, 1983**
- **Philippines** **October, 1983**
- **Pakistan** **Nov. 9-23 '83**
- **Philippines** **Sept. 19 '84**
- **Sri Lanka** **Dec. 5-15 '84**

**C. RESEARCH PAPERS**

1. **Problems and potential in promoting charcoal manufacture: a case study from Indonesia.** **Dec. 1983**
2. **Overview of Forestry Research in Indonesia** **Dec. 1984**

**DOC.6010A**

## **2. Field activities and technical assistance**

Over the three year term of office, the RFA was invited to assist several USAID Missions in Asia in a variety of tasks. Of the total of ten AID Missions in Asia, the RFA visited eight (the two not visited being Burma and Fiji). RFA worked closely with Mission staff generally as an individual consultant, but also on various occasions as a member of a team of consultants. In this context the RFA performed the following tasks:

- review of forestry sector activities and definition of alternative possible AID interventions in forestry sector
- development of project concept papers
- project design
- project paper preparation and review
- project monitoring and evaluation definition of required technical assistance, including scope of work and consultant background required
- identification of candidates for technical assistance positions
- development of technical information specific to project needs
- assistance in project implementation with preparation of required official documentation
- review of project proposals submitted to USAID under specific projects
- explanation of forestry technical issues, concepts and terms to AID project staff
- information to AID project staff and consultants regarding services available through AID Washington, D.C., the Forestry Support Program and other informational services.

Due to Mission sensitivity regarding the movements and contacts of visiting AID staff, contacts with host government agencies and other donors during visits to foreign countries were somewhat limited. During the initial consultancy to the various Missions, RFA restricted activities to those related to Mission work

assignments. In subsequent visits with the development of trust between the RFA and the Mission staff, this self-imposed restriction could be relaxed.

### 3. Representation

On occasion the RFA was invited to participate in international conferences as the AID representative. Given the very time consuming nature of this activity, RFA limited attendance at such conferences to those directly related to USAID projects and program development. The meetings attended included the FAO Regional Watershed Conference (1982) in Kathmandu; the FAO Regional Workshop on Wood Energy Development (1983) in Bangkok; the First ASEAN Forestry Conference (1983) in Manila; the IUCN Parks Conference (1982) in Bali; the AID ASIA Bureau/Asia Society Forestry Conference (1982) in Bangalore; and the ASEAN Seminar on Watershed Research (1984) in Jakarta, among others.

### C. Reporting Activities

RFA activities and recommendations were reported in a variety of formats, including:

- monthly reports
- trip reports
- memorandums, which included
  - requests for assistance
  - topical reports, i.e., memorandums to the Mission on subjects of particular interest, for example, forestry reference books, forestry journals, training courses available et al.
- annual reports, orally presented at AID headquarters.

Regular distribution of these reports were made to the offices of ASIA/TR/EFE, S&T/FNR and FSP. Requests for assistance were directed to FSP. In general, the target audience for the topical reports was the Missions; in the interest of developing a better rapport with Mission staff and increasing the responsiveness, one

liaison person in each Mission, generally an individual responsible for overseeing forestry and related activities at the project officer level, was selected to receive copies of these reports. A list of such reports prepared is presented in Table 1

#### D. Issues and Constraints in AID Support to LDC Forestry

During the past three years, the RFA/Asia has been able to examine close-up the activities of various USAID Missions in the forestry sector in Asia. The RFA/Asia position was unique in that unlike similar posts in Africa and Latin America, the RFA/Asia was housed within a Mission, in this case Jakarta. This position gave the RFA a first hand view of Mission operations while permitting a broad view of the forestry problems and prospects across Asia. Several factors have become apparent as stumbling blocks in the Agency's efforts to effectively assist the development of the forestry sector in LDCs.

The major constraints include the following:

- the limited availability of forestry technical expertise, with experience in tropical countries and especially tropical Asia;
- the existence of hidden agenda, e.g., restrictions on purchasing and hiring, which often impairs efficient effective project implementation;
- poor communications and cooperation between the supporting offices at AID headquarters.

Many of these handicaps are faults of the bureaucratic structure of the organization and the fact that it serves many purposes. Nevertheless, these factors should be recognized and taken into consideration in the design of the forestry projects and the Agency programs and policies.

At the field level with most of the staff having a generalist background or agricultural training, there is limited understanding of forestry and little appreciation of the problems and

potential of forestry sector development. Moreover, given the proliferation of environmental literature, both in the US and overseas, the problems in forestry are perceived by some to be almost wholly one of an environmental nature. In most cases the prevailing opinion is that forestry and that the job that the foresters do is primarily destructive. Only in the last few years has the perception of forestry changed. The promotion of agroforestry over the past few years, has contributed greatly to develop an appreciation of trees in many Missions. The role of forestry as linked to the provision of forest products and the development of rural industry is not much appreciated. Training courses should be developed for the Mission project officers to improve the understanding of forestry.

The lack of technical expertise in the Missions and the increasing amount of bureaucratic red-tape involved in securing suitable technical expertise hampers both the design and the implementation of Mission projects. The effects are seen both in delays as well as a lack of consistency in project development, as many short-term consultancies attempt to replace what is in fact a full-time job. In some cases the host country project officers take advantage of the situation to bend project objectives to their convenience. In other cases host country personnel are short-changed in that they do not receive the expertise required and expected, in which case the project falls short of its targets.

The limitations with regard to contracting personnel and equipment oft-times increases the management burden of the Mission personnel and imposes constraints on the project operations. Both project implementation and the reputation of the Agency suffers as these hidden agendas are pressed often to the detriment of project goals and objectives. Recent initiatives from S&T through FSP to engage more professors on sabbaticals and graduate students on doctoral research should provide valuable research assistance to the Mission as well as contribute greatly to increasing the level and quality of American forestry expertise

available to the Missions.

Apparently poor communications and cooperation between several offices within AID Washington headquarters proved confusing, and off-putting, to both Missions as well as host country government agencies. Activities sponsored by different offices appeared repetitious or fail to achieve their potential impact due to a skewed or limited audience. Telephone communication between the RFA and the various backstopping offices proved the most effective means of keeping the forestry support personnel apprised of developments and of resolving problems. Visits to field Missions and to the AID Washington headquarters, although costly were effective in exchanging information and improving working relationships.

A steady flow of material was received from the S&T supported Forestry Support Program; the worldwide and general nature of the subject matter of some of this material, however, rendered it of limited interest to individual Mission personnel. In addition, the lengthy process involved in securing the reference documents cited proved an annoyance. In alerting Mission personnel to useful materials and providing documents, the AID Resources Report was found to be excellent. The compendia of articles on various topics developed by S&T agroforestry officer also proved most informative and useful, although tighter editing would have been appreciated.

The flow of information between the Missions and the RFA was unfortunately, essentially one-way, i.e., to the Missions. The Missions, however, were quite conscientious in copying the RFA office on cable traffic of interest. With regard to requests for information or comment on proposals the Missions were less helpful. This was due in part to the mail system. Information sent by pouch was unreliable in terms of time as well as delivery. In some cases it was more efficient to use the international post.

### **E. Recommendations of an operational nature**

Missions are generally well aware of their limitations and responsive to offers of genuine assistance. Thus, I found the Missions most appreciative of the assistance rendered in my capacity as Regional Forestry Adviser. The easy access to and ready response of the Regional Forestry Advisor's Office was also appreciated by the Missions.

Missions staff have a surfeit of project and program responsibilities which leave them little time to review quantities of reference materials that flow through the system. In this context, it appears that they appreciate most, information which has been prescreened and focused to their specific needs and interests. Information analysis and distribution, or in-house networking should be strengthened and focused. For instance, it would be beneficial to identify such areas of special interest, e.g. forestry education and training, forestry research, forestry extension, social forestry, information systems, et al., and prepare memorandums on each of these subjects covering aspects such as:

- existing information exchange networks and newsletters,
- reference materials,
- training opportunities,
- exemplary projects suitable for study tours,
- institutions with particular expertise in the region,
- interested AID or USFS staff to contact for further information.

Alternatively a bimonthly or quarterly information bulletin could be developed which would focus each month on a different subject. It should be noted that given the relatively rapid turnover of AID staff in some projects and Missions, it would be beneficial to review and update the various topics every few years.

In supporting Mission projects and addressing their information needs more attention should be paid to historical data; much of

the research done under the colonial administrations was of very good quality and is still relevant today. The center should assist the Missions in obtaining access to this data and support any activities to review these data bases for information relevant to the design and implementation of current projects. New research undertaken, whether Mission or government supported activities, should build on information base which already exists.

Presently cooperation between international agencies in the field of forestry appears very poor. Contact between the various agency representatives consists primarily of chance encounters between individuals at international meetings. Lack of coordination leads to duplication of efforts in publications in projects and in funding of host country efforts. A concerted donor effort in the area of forestry especially with regard to matching project needs with country support capabilities would lead to a more efficient and effective impact on forestry sector development.

With many USAID forestry projects having been in operation for several years already, valuable expertise exists in the various Missions throughout the region which should be shared. More cooperation between Missions especially within the subregions of South Asia and Southeast Asia where ecological and socio economic conditions are similar should be encouraged. The participation of neighboring Mission staff in project design and evaluation could result in better projects.

## II. AID Asia Host Country Forestry Sector Profiles

A brief review of the state of forest resources and forestry in Asia is given in the following section. The purpose of this presentation is to set the stage for an examination of the progress and problems in forestry sector development in Asia. Discussion of the issues has been undertaken on a topical basis to highlight the commonality of the problems and the potential in many of the developing countries of Asia.

It is significant, however, to note the existence of a wide diversity of ecological as well as socio-economic conditions in Asia. The heterogeneity of the region differentiates it from other developing areas of Africa and Latin America. The differences as well as similarities between the countries of Asia are important to bear in mind during both the design and implementation of forestry programs and projects, both regional and national. Approaches to forestry problems developed in one country should be evaluated carefully before being selectively introduced to neighboring countries. Differences in levels of institutional development can be very important in affecting the success of technology transfers.

Although AID assistance is directed to only ten countries in Asia (Pakistan, India, Nepal, Bangladesh, and Sri Lanka in South Asia; Burma, Thailand, Indonesia and the Philippines in Southeast Asia and Fiji in the Pacific Islands), the range of diversity within this group parallels that of the region as a whole. Given the major differences, ecologically, economically and culturally, between the countries within first two of the abovementioned groups, it is most appropriate to view the AID activity area in terms of two major sub-regions, South Asia and Southeast Asia

Despite the differences between the countries in these two sub-regions, overlap exists in various physical as well as cultural aspects. Religion is one such element which can have a significant influence on social interaction and therefore the design of

social forestry programs (Muslim countries include Pakistan, Bangladesh, and Indonesia; Buddhist countries include Sri Lanka, Burma, and Thailand and so on ). The colonial legacy is another element which has substantially influenced the administrative apparatus as well as the legal basis of forest policy in various countries ( Pakistan, India, Bangladesh, Burma and Sri Lanka, are former British colonies; Indonesia a former Dutch colony; the Philippines, a former U.S. colony; Nepal and Thailand which were never colonized by the western powers).

These various cultural aspects affect not only public attitudes toward forest exploitation and management but also the institutional structure of the government including the bureaucracy designed to carry out current forest policy and programs and the educational apparatus set in place to develop future forest managers. Programs designed to address the problems of forestry development in these countries should take into account these socio-cultural factors as well as the physical aspects of the resource in developing environmentally sound and socially acceptable forest development policies and programs.

Despite the importance of the influence of these and other numerous and complex issues affecting forestry development in the various AID Asia host countries, in the interest of maintaining this report in manageable proportions, the following sections have been restricted to an overview of the conditions of the physical forest resource and its developments in Asia. Given the already existing excellent and extensive work by FAO and the World Bank, among others, in the in-depth examination of the forestry sector in several Asian countries as well as Asia as a whole, a comprehensive country-by-country analysis has not been attempted in this document. Following the summary of general conditions presented in the first two of the following sections, discussion is focused on those countries and topics of special interest to AID, specifically fuelwood. Subsequently, foreign development assistance in the forestry sector in AID host countries in Asia is reviewed and summarized.

## A. Profile of Forest Resources in Asia

### 1. NATURAL FOREST VEGETATION OF TROPICAL ASIA

In 1980, the total area under natural woody vegetation in 16<sup>n</sup> countries of tropical Asia was 445 million ha or about 47% of the land surface (Table 1). Indonesia, India, Burma, Papua New Guinea and Malaysia were the five largest on the basis of extent of natural woody vegetation. The various forest classifications include closed and open broadleaved and coniferous tree formations bamboo forests, forest fallows and shrub formations.

Closed forests correspond to stands without continuous grass cover, with trees whose crowns cover a high proportion of the area, generally multistoreyed, and which have not been cleared for agriculture in the past 20 to 30 years. They are either managed or unmanaged forests and may have been logged-over once or many times. Indonesia, India, Burma, Malaysia, Papua New Guinea, and the Philippines, account for some 90% of the productive closed broadleaved forest areas of the region. The predominant broadleaved forest type is "tropical rain forest" where dipterocarps are the most important botanical family, both in number and commercial value. In Indonesia with approximately 49 percent of such forest, more than half of this area is located on Kalimantan and Sumatra, and Irian Jaya. In Malaysia and the Philippines mixed dipterocarp forests account for over 90% of the area. In India closed forests are essentially tropical deciduous forests; tropical evergreen and semi-evergreen forests constitute only some 7 percent of the closed forests. In the closed forests of Burma, teak is the predominant species.

Approximately half of the productive closed broadleaved forests of the region are considered still virgin, i.e., unlogged in recent history. Out of a total area of 97 million ha where there has been no logging, some 39 million hectares are in Indonesia (two thirds of which is in Irian Jaya), 14 million ha in Burma and also in Papua New Guinea, 7.5 million ha in Malaysia (of which three quarters is in Sabah and Sarawak); and 3 million ha in the Philippines. The extent of these undisturbed

productive forests gives a rough indication of the future log production possibilities in those countries.

\*/ Bangladesh, Bhutan, Brunei, Burma, India, Indonesia, Kampuchea, Laos, Malaysia, Nepal, Pakistan, Papua New Guinea, Philippines, Thailand, Sri Lanka and Vietnam

**Table 2. Average annual rate of plantation establishment**

| Subregions                   | Period  |         | Percentage increase |
|------------------------------|---------|---------|---------------------|
|                              | 1976-80 | 1981-85 |                     |
| South Asia                   | 148     | 179     | 20.9                |
| Continental Southeast Asia   | 15      | 25      | 66.7                |
| Centrally planned countries  | 21      | 31      | 47.6                |
| Insular Southeast Asia       | 235     | 204     | 13.2                |
| Tropical Asia (16 countries) | 419     | 439     | 4.8                 |

When these statistics are examined closely, several significant factors can be observed. During the five year period 1981-1985, we can expect an increase by some 21% in the plantation area established in South Asia, mainly in Bangladesh, India and Sri Lanka. The large increase in continental Southeast Asia, will result largely from the near doubling of effort in Thailand (from 65,000 ha to 121,000 ha). Vietnam plans to escalate its successful efforts from 100,000 ha to 145,000 ha per year.

Table 2.

## Area of Natural Wood Vegetation in Selected Asian Countries, 1980

| Region and Country        | Forest Area    |              |         | Forest Area as Percentage of Land Area in Country | Forest Area as Percentage of Total in Region | Estimated Average Area Deforested Annually '000 ha |
|---------------------------|----------------|--------------|---------|---|--|--|
|                           | Tree Covered   | Fallow/Shrub | Total   |   |  |  |
|                           | '000' hectares |              |         |   |  |  |
| <b>I. South Asia</b>      |                |              |         |   |  |  |
| Pakistan                  | 2,480          | 1,105        | 3,585   | 4.46  | 0.81   | 7  |
| India                     | 57,234         | 14,848       | 72,082  | 21.93   | 16.91  | 147  |
| Nepal                     | 2,121          | 340          | 2,461   | 17.40   | 9.55   | 84   |
| Bangladesh                | 927            | 315          | 1,242   | 8.70  | 0.28   | 8  |
| Sri Lanka                 | 1,659          | 1,068        | 2,727   | 41.56   | 0.61   | 25   |
| <b>II. Southeast Asia</b> |                |              |         |   |  |  |
| Burma                     | 31,941         | 20,700       | 52,641  | 77.64   | 11.82  | 96   |
| Thailand                  | 15,675         | 1,300        | 16,975  | 25.53   | 3.82   | 333  |
| Indonesia                 | 116,895        | 41,260       | 158,155 | 82.40   | 35.53  | 550  |
| Philippines               | 9,510          | 3,520        | 13,030  | 43.47   | 2.93   | 101  |

Note: Total region of tropical forests in Asia covers 16 countries, including those above plus Bhutan, Brunei, Malaysia, Kampuchea, Laos, Vietnam, and Papua New Guinea.

Source: Derived from Tables 146, "Forest Resources of Tropical Asia" by Y.S. RAO, FAO Regional Office Bangkok, 1983

DD:mr:DOC.6042A

Productive broadleaved forests which have been logged amount to 58 million ha (about one fifth of the total closed broadleaved forest area). Indonesia, Malaysia and Philippines, which account for 75% of this area, supply the bulk of tropical hardwood logs for international markets and domestic processing.

The open broadleaved forests are mixed broadleaved and grass formations with a continuous dense area of grass layer with 10 percent or more of the area covered by tree crowns. Some 31 million ha of such forests exist in the region, mainly in Thailand, Lao, Kampuchea and Vietnam. Together these four countries account for 58 percent of this forest type in the region. India has some 5 million ha., Indonesia 3 million ha and Papua New Guinea 4 million ha. Only a quarter of these forests are considered productive; nearly all the productive forests are in the countries of continental Southeast Asia.

Only a limited area is covered by coniferous forests; the approximately 8.4 million ha of this forest type represents 2.5 percent of the forest area. About two thirds of these forests are considered productive, largely in the Himalayan belt in South Asia. India, Pakistan and Bhutan in that order have the largest areas under productive coniferous forests. Burma, Thailand, Lao, Kampuchea and Vietnam together account for about 500,000 ha of productive coniferous forests. In Indonesia (North Sumatra and Java) coniferous forest covers an area 320,000 ha, of which half is classified productive. In the northern Luzon area of the Philippines there are some 190,000 ha under conifers.

The region has some 5 million ha under bamboo of which 3.5 million ha are considered productive. The major bamboo bearing areas are India (1.4 million ha.), Vietnam (1.2 million ha.), Thailand (0.9 million ha.), Burma (0.6 million ha.) and also Lao and Kampuchea. In India, bamboos (Dendrocalamus strictus, Bambusa arundinacea, Misocanna bambusoides, etc.) are a major raw material for the pulp and paper industry, supplying nearly two-thirds of the fibre requirements of that industry.

In addition to some 69 million ha of fallows of closed forests, there are 4 million ha of open forest fallows in the region. Forest fallows are generally derived from clearing by shifting cultivation and consist of a mosaic of "secondary bush", "young secondary forests" or "secondary growth". Grass fields of Imperata cylindrica which are the result of short rotation shifting cultivation with extensive burning are not included in the category of forest fallows since there is little or no chance for a rapid recolonization by a secondary forest growth. Ecologically, forest fallows have an impact on the maintenance of the environmental functions of the woody vegetation cover and are therefore regarded as sufficiently important to attempt quantification. Their distribution, composition, structure and dynamics are important to understand the nature and quantity of deforestation that is taking place in tropical Asia. Shrub formations extend over an area of 35.5 million ha., some 67% of which occur in Indonesia. India has some 7 million ha under shrub formations, which are mainly open forests with thorny species.

## 2. THE LOSS OF FOREST AND FOREST LAND CONVERSION

The consequences of loss of tropical forest cover are now a matter of worldwide concern. During 1976-80 the total closed forest area deforested was 9 million ha., some 1.815 million ha every year. On a regional basis, this is expected to level off at 1.826 million ha annually per year over the period 1981-85. If this trend is projected into the future, by the year 2000 some 36 million ha of closed forest areas would have been converted to non-forestry uses. This represents an average annual rate of deforestation of closed forests of 0.6 percent and a decrease in the area closed of forest area in the region from 306 million ha in 1980 to 270 million ha in 2000, a reduction of 12%.

Analysis of the rates of deforestation by country shows that Indonesia leads all others with a average annual rate of forest removal of over half a million hectares; Thailand ranks second with a loss 333,000 ha annually. A range of 100,000 and 250,000 ha annual loss is seen for Malaysia, India, Laos, Philippines and Burma. The least affected countries in absolute terms are Bhutan (2,000 ha), Pakistan (7,000 ha.), and Bangladesh (8,000 ha), with the latter two having suffered extensive losses previously.

With regard to the future, an increase in the rate of deforestation during 1981-85, is compared with 1976-80, is expected for in Sri Lanka (mainly due to the Mahaveli irrigation project), in Indonesia (with the transmigration and estate crops programs significant contributors) Malaysia and Kampuchea. A decrease is forecast for Thailand, Philippines, Brunei and Lao because of recution of available and accessible forest land.

Deforestation is the result of many activities, some of which are spontaneous and some of which are supported by local and national governments, in policy or programs. Various government agencies compete for undeveloped land, primarily forest land, for the expansion of agriculture, of infrastructrue, industry, resettlement and other purposes. The loss of forest land for construction of irrigation and hydroelectric projects is observed in almost every country, in recent years more particularly in India and Sri Lanka. Mining destruction in Thailand and Malaysia (tin mines) and in Papua New Guinea has been reported.

Shifting cultivation which follows in the wake of logging is a major cause of deforestation. Due to a rapidly changing rural picture plus the absence of continuous monitoring of degradation of forest there is a virtually no data on the magnitude of population involved and the areas under shifting cultivation around the world. Conservative estimates indicate that some 30 million people are dependent on shifting cultivation and the extent of forest area affected by these practice say

be as much as 75 million ha. The areas and countries most seriously affected are: Kalimantan in Indonesia, northeastern and the dry central states of India, central highlands in Philippines and parts of Burma, Thailand and Bangladesh, in that order.

Spontaneous encroachment "squattling", and migration are all manifestations, of increasing demand for cultivable land by landless and unemployed rural poor and account for a considerable degree of deforestation. Such type of forest conversion occurs primarily in Philippines, Nepal, Thailand, Indonesia. Population pressure, soil exhaustion, political conflict, and economic oppression are some of the causes of these moves.

Organized settlement activities are sponsored generally by government authorities are another important cause of forest removal and conversion. Such programs currently exist in Indonesia, Malaysia, Sri Lanka and to a small extent in Nepal. In Indonesia, under the World Bank sponsored Transmigration Program people are resettled from the overpopulated islands of Java, Bali and Madura to Sumatra, Kalimantan and Irian Jaya, where each family is promised .5 ha of land; hundreds of thousands of families will relocate to the Outer Islands under this program and virtually all the land to be distributed will come from areas currently under natural forest. In peninsular Malaysia there are 5 World Bank-assisted settlement projects where forest lands are cleared and planted with oil palm and rubber. In Sri Lanka under the Mahaweli irrigation project, some 260,000 ha of forest area will be converted to irrigated agriculture for resettlement purposes. In Nepal, a 5-year resettlement plan was taken up by the government during 1973-78 resettled an average of 3,000 families from the Hills to the Gangetic plains on Nepal's southern border.

The widespread removal of forests is followed by several adverse effects on the ecology and environment, including the loss of land and water resources. Tropical soils become impoverished with the destruction of the forest nutrient cycle, and water-holding capacity is reduced. Consequently floods and droughts are exacerbated. The carbon

cycle, the radiation balance, weather patterns, the gene pool and wildlife habitat are all affected. The impact on indigenous forest communities in terms of loss of food sources, medicines, building materials, and a multitude of services can be very serious.

### 3. REBUILDING THE FOREST RESOURCES BASE

The trends in deforestation and the consequent deteriorating environmental and natural resource conditions promoted an awareness of these inter-relationships which has stimulated initiatives for restoring the natural resources. In almost every country, an increased awareness about the need to raise plantations resulted in significant achievements in the 1970's. As of 1980 some 5.111 million ha of plantations had been established. An analysis of plantation policies, programmes and projects financed either through domestic or international funds indicate that, during the five year period 1981-85, the magnitude of effort undertaken during 1976-80 will be maintained at about the same level. The total area planted is likely to be 2.192 million ha. The average annual rate of plantation establishment during 1981--85 compared with the annual rate of planting during the preceding period by subregion is summarized below.

In insular Southeast Asia, however, there is a projected decrease of more than 220,000 ha. This condition stems from the fact that a significant part of Indonesia efforts will consist of the replanting of former plantations. An increased effort will take place both in Malaysia (80,000 ha) and the Philippines (39,000 ha ).

Plantations of softwood species (mainly pines) are expected to be established in Indonesia, Malaysia and the Philippines. The composition of hardwood species for industrial and other purposes is, by and large, likely to be the same as during 1976-80. Timber species with longer rotations (60 years and over) appear to be losing favour. It is anticipated that as opposed to some 626,000 ha of such plantations during 1976-80 only 449,000 ha would be planted in 1981-85; there will be an increase in industrial plantations of high yielding hardwood species with short rotations - essentially for production of pulpwood - from 348,000 ha (1976-80) to 477,000 ha (1981-85). Similar increases in plantations of high yielding species for non-industrial plantations are foreseen.

The increased emphasis on non-industrial plantations during 1981-85 reflects the importance attached to meeting growing fuelwood needs of rural populations. Out of about 1 million ha of fuelwood plantations to be raised in the region during 1981-85 (compared with 884,000 ha in 1976-80) 58% would be in insular Southeast Asia countries and 26% in South Asia. One country making concerted effort in this direction is likely to be India (21,000 ha).

DD:er (AID/Jakarta:01/23/85) DCC.6042A

## **B. Overview of forest policy and administration**

Forest policy should enunciate the philosophy of government, in turn reflecting the goals of the national constitution, regarding the conservation and development of the nation's forest resources. As such it provides guidance for all programs of forest management and exploitation. Without a policy basis, forestry projects risk becoming misdirected, peripheral and isolated. A clear comprehensive policy foundation provides the basis for administrative and program continuity as well as support from associated sectors and the forestry community at large.

Forest policy has developed in various ways and to different levels of sophistication in the several AIP host countries in Asia. In some cases, current policy represents the evolution of practices developed during a previous colonial government. In other instances, existing policy appears to be little more than a random and ill-connected aggregation of forestry regulations accumulated over several decades. In still other countries, forest policy statements appear to contain all the elements of a textbook model, yet seem to lack a certain relevance to the social and economic conditions of the country in question. Seldom does forest policy appear to be the studied result of an in-depth review and analysis of forestry conditions and problems interpreted within the overall context of national development program needs.

The issue of forest policy has long been neglected basically because the forest itself, ubiquitous and self-sustaining, has been taken for granted. Traditionally the forest has been considered as only one of many elements of a country's natural resource endowment. Historically the forest has been treated as a refuge, an item of spoils and source of payment for government supporters, and a reserve of land to be converted someday to agriculture production. It has been viewed largely as a capital property of the government to be retained if possible for future exploitation, but generally not managed in any true sense of the

word. (Traditional forest management techniques were introduced by the colonial administrators in the context of teak production and later extended to "sal" and a few other commercial species.) The production and harvesting of forest products has remained largely one of collecting the bounties of nature with little sincere attention directed to improving forest regeneration, composition, stocking or growth.

With the growing acknowledgement of the importance of forest resources in providing basic necessities to many rural inhabitants (e.g., fuelwood, fodder, building materials, medicinal herbs, et al.) as well as contributing to soil and water conservation, there has come the recognition of the possibility of exhausting the natural forest endowment. Rapidly increasing populations in traditional societies have resulted in increasing forest transformation for forest products as well as land conversion. Foresters, ever more on the defensive against various elements of the public and private sectors, have come to recognize the necessity of a strong and comprehensive forest policy in order to ensure the conservation and sustained productivity of forest resources including the development of its full potential in the context of larger national development goals and objectives.

Deficiencies exist in both the old and new, de jure and de facto forest policies, despite amendments which may occur with the edition of each new development plan. Policy created in a vacuum so to speak, that is, without a close examination and realistic appraisal of the forest conditions and practices as well as the associated rural milieu, tends to be too idealistic. Consequently, it may appear to be more a reflection of intellectual aspirations than national needs and practical development objectives.

Similarly policies created within a single ministry without outside consultation may risk being at odds with policies of other government departments. The commonly found result is that

the programs of the several ministries work at cross purposes, e.g., in Indonesia, the Transmigration Department is concerned with converting forest to agriculture whilst Forestry is trying to reforest other land and establish timber estates. An effective policy must be coordinated across the board in accord with the goals and objectives of all elements of government.

Another common problem appears in the translation of government policy into effective field programs and projects. The limited availability of government funds (exacerbated because of the traditionally low priority of the forestry sector) plus the selective funding of projects by foreign development assistance agencies with corresponding host government responsibilities for co-funding can distort program development and disrupt the orderly implementation of forest policy. Care should be taken that the development of innovative elements of the policy, such as social forestry, agroforestry or watershed rehabilitation, should not create disruption in the forestry program, but rather be coordinated and integrated into the overall development of the sector as a whole.

One of the most critical problems in the context of forest policy is the issue of administration; in some instances forest policy for all practical purposes is not implementable. With the introduction of new concepts and responsibilities into the mandate of the forest department, corresponding changes may be required in the administrative apparatus. Such changes in forest administration would in turn have implications for in-service training, as well as the forestry education system at large.

The importance of adapting the administrative structure of the forestry department to the needs of revised policy ~~and~~ not be underestimated; the administrative and field staff are key personnel with regard to project implementation. Individuals respond to a set of incentives, codified and uncoded, which vary with cultural tradition, education, skills and experience. If the reward system, i.e., this set of incentives, is not in alignment

with government forest policy objectives, the individual may be motivated to act in a manner which in fact is at cross purposes with overall government policy. Thus, de facto policy may deviate from de jure policy as a result of the organizational patterns and operational procedures of the forest department administration. Administrative inadequacies may include:

- lack of skilled and experienced staff personnel;
- a national wage structure which is not sufficient to provide an adequate life style;
- lack of funds to hire additional staff;
- lack of incentive to carry out policy;
- lack of appropriate procedures to handle administrative requirements of new program.

Unless these and similar administrative details are addressed in policy reorganization, the forest department bureaucracy may not be able to cope with the requirements of various new projects in a manner consistent with stated policy. If issue of administrative reform remains uneffected; programs and projects may be mismanaged to the extent that the policy is rendered ineffectual.

With regard to forest policy and the direction of future developments in this regard, several encouraging developments are occurring throughout the region which should be noted. Although some of these ideas have permeated the rhetoric of the forestry intellectual community for several years, activities have begun to take place in the developing countries which indicate that these ideas finally may have achieved sufficient momentum to initiate a process of change.

Firstly, there is an increasing awareness of the inadequacy of past policies (or their implementation) to ensure that the future forest products needs (including fuelwood) of the nation, and especially those of the rural people, are met.

Secondly, there is an increasing awareness of the interrelationship of all the natural resources and the importance of utilizing these resources in an ecologically sound manner.

Thirdly, there is a growing recognition of the need for forest policies which promote the protection as well as the development of the forest and respect the traditional and developing use rights of the general public.

Fourthly, there is an emerging realization that much of the past failure of forest policy administration has been the result of archaic bureaucratic apparatus.

Fifthly, with the recognition that under the current structure the many forestry bureaucracies are responsive neither to the needs of their members or the public, the advantages of administrative decentralization become increasingly more attractive. In addition, there is the recognition that a large government bureaucracy often adds little to national productivity, can be difficult to manage in a developing country with often only rudimentary infrastructure, especially in the more remote forest areas, and can be increasingly more expensive.

Finally, there is recognition of the enormity of the job facing the forestry departments with regard both to rehabilitating degraded lands and bringing natural forests under scientific management, and of the importance of winning the support and the participation of rural people in these tasks.

Several AID host countries in Asia, including India, Thailand, Sri Lanka and Indonesia have recently undertaken, some with outside assistance, reviews of their nation's forest policies. Of particular focus in India has been a review of the development of the institutional support services, such as research and education, which are required to sustain the massive program of social forestry undertaken in recent years with multi-donor support. In Thailand, forest policy has been examined in the context of a

larger investigation of natural resources policy and management. Supported by World Bank funds, the government of Sri Lanka has undertaken an intensive review of the forestry sector which is expected to form the basis for the development of a new forest policy. Similarly in Indonesia, a tri-Ministerial review team assisted by the International Institute for Environment and Development (IIED) of Washington and London is conducting an examination of all policies affecting the conservation and management of the tropical rain forest in Indonesia. As in Sri Lanka the findings of this investigation is expected to form the basis of a comprehensive revision of forest policy.

These activities evidence the realization that policy review and revision are an essential step in a process of rationalizing forest management and ensuring the conservation of developing country forest resources. Through these investigations it is also becoming clear that policy revision is only the first step. The very important task which follows will be in many cases the modernization of forest administration, in organizational structure as well as orientation and attitude. For a number of reasons, this process will be slow and in some cases painful, but almost surely it is inevitable.

### C. Assessment of forest development programs and progress

Concern among the donor community for forestry in developing countries has developed largely over the past decade with the dissemination of publications and statistics regarding the widespread and rapid destruction of the tropical forests on the major continents of South and Central America, Africa and Asia, including insular southeast Asia. Of major concern was the loss of forest resources to the many millions of people who depend on these resources for basic life necessities, especially fuelwood. Subsequently foreign development assistance agencies stepped up programs to assist the developing countries in designing forestry development programs which focused on restoring forest resources

both for the provision of basic necessities as well as the stabilization of soil and water resources.

As the success of these novel projects has depended upon a number of factors, which extend beyond the limits of the forestry sector, an evaluation of their progress in strictly forestry terms seems both inadequate and inappropriate. The traditional yardsticks, such as number of acres treated, number of trees planted, survival rates, growth and yield rates are important yardsticks, but nevertheless cannot ensure the ultimate goal. Probably more important are the institutional changes that are required both within the forestry sector as well as in the relationship between forestry and other sectors including the local populace and in the rural population's attitude toward their forest resources. Only advances on these fronts will ensure that the physical forestry targets become the benchmarks for the further development and conservation of the new forest resource. Such achievements are, however, the most difficult to measure.

Further it may be added that the time frame against which project or program accomplishment are gauged is often unrealistic. If the development of the United States Forest Service is reviewed, it can be observed that innovative concepts, for instance the concept of multiple-use forest management, may lie dormant for a few decades before they are incorporated into forest policy and mandated in forestry regulations.

Considerable debate has arisen in the past few years regarding the evaluation of this new generation of forestry projects, i.e., the community or social forestry projects, the agroforestry and silvopasture projects. A truly fair answer can only be "as well as can be expected". The truth, in fact, is that early analysis oversimplified the problems as well as the solutions. Unaccustomed to the highly variable nature of social programs (for social and community forestry are essentially just that), early project advisors did not anticipate the numerous socio-cultural aspects of forest (or tree) resource use. Foreign deve-

development assistance agencies (see Appendix 3) have spent many millions of dollars in planting trees and developing and distributing more efficient household stoves, and yet the success of these programs, in terms of halting forest destruction and generating substantially more fuel, has been less than anticipated.

Despite the recent attentions of higher government officials, in most countries forestry continues to operate under the constraint of limited funds. Even in the countries where the forestry sector is a relatively big revenue earner, the funds generated go directly to the central treasury. In many instances forestry is still viewed in competition with agriculture. With priority given across the board to food production, agriculture has greater funding for field projects, extension, research and education. Although forestry is often considered as a sub-sector of agriculture, the conditions under which the two operate are often dramatically different. Only in recent years with more attention turned to forestry have these conditions begun to change. The effect of these investments in forestry institution-building will not be felt for many years yet.

Consequently forest development may be expected to continue inconsistent progress for many years to come. With the projects often organized on a limited foundation of technical expertise and funding with little or no reserve of personnel, equipment or funds, progress tends to go by leaps and falls. There is no one sure project formula or miracle tree which has emerged as the solution to the problem of forest conservation in the developing countries. In light of the institutional conditions within the forestry sector in most developing countries, the slump in the international forest products markets in recent years; the heavy influence of socio-cultural factors in the new forestry and the inadequacy of previous forest policy and development assistance to address the social and economic problems of forest development, the progress of forestry programs and projects, especially in the new subject areas of social forestry has been as well as could be expected given the circumstances noted above.

Given the interest of AID on the problems of fuelwood and agro-forestry the following paragraphs, will focus on eight of the ten AID Asian countries in a brief review of fuelwood conditions and programs. The general problems outlined above, this section and the previous section on policy, apply in varying levels of severity to virtually all of the countries discussed below.

## 1. Bangladesh

### a. Current Conditions

Bangladesh is one of the most densely populated countries in the world with an average of 608 inhabitants per square kilometre. Some 91% of its 88 million people are essentially dependent on fuelwood and agricultural residues as sources of domestic energy. The estimated consumption of fuelwood in 1980 was 9.7 million m<sup>3</sup> of which 80% was derived from village groves, homesteads and scattered trees in non-forest areas. The mangrove forests in the lower delta area, known as the Sunderbans (405,000 ha), are an important source of fuelwood and charcoal for the population of Dacca.

In addition to domestic consumption there is a growing demand for fuelwood for many small-scale industries. Requirements for the brick industry alone are expected to rise from 608 million tons in 1980 to 1.4 billion tons in 1985. Studies conducted by the Forest Department and the Energy Study Group showed that per capita fuelwood consumption in the country is decreasing rapidly due to supply shortages in the face of a rapidly increasing population. This reduction in wood fuel is compensated by more intensive use of agriculture residues.

Supplies from forest areas are expected to decrease further as remaining forests are increasingly subject to both deforestation and degradation. The inland sal forests (Shorea sp.), which are located close to densely populated areas, are succumbing rapidly to agriculture expansion. The Chittagong hill tracts are affected

by shifting cultivation with increasingly shorter fallow periods. The mangrove forests already suffer over-exploitation for firewood as well as building timber. The area subjected to deforestation annually is estimated at 8,000 ha. Such trends indicate that the dependence on the already overtaxed village forest and homestead gardens will increase.

#### b. Government Initiatives

Nearly all plantations established until 1980 (128,000 ha) are compact blocks and essentially for industrial use. The second national five year plan effective 1 July 1980 provided a sum of Taka 3,100 million (US\$ 193 million) for forestry sector development. An increase in the forest plantation targets and an emphasis on energy production and forestry extension are the highlights of the plan. In addition, an increase in the afforestation program of village land is planned and extensive planting along roadsides, railway right-of-ways, canal and coastal embankments has been undertaken. Inland sal forests have been selectively opened for agroforestry including the production of fuelwood species. Several current or proposed bilateral and multilateral foreign donor assistance programs will focus on wood energy: mangrove plantations (World Bank), community forestry (Asia Development Bank and FAO), energy plantations in Tea Garden Land (ODA), on-farm forestry (USAID) et al.

### 2. India

#### a. Current Conditions

The impoverished condition faced by the population of India with regard to wood fuel dates back several centuries. Historians deduce that the area of the ancient civilization of the Indus river valley, an area which stretches across the border to Pakistan, has contributed significantly to the present day lack of vegetation and arid climate. Wood fuel would have been used to fire the brick kilns, pottery kilns, metal forges, as well as domestic and commercial cooking fires. The situation today in

most rural areas of India is not much changed. To the still existent primitive crafts can be added tobacco curing, sugar refining, rice milling and numerous other small-scale industries which use wood fuel.

Similarly for domestic cooking, almost 90% of India families still rely upon traditional fuels. As fuelwood becomes increasingly more scarce in the rural areas, households use farms residues including cow dung for fuel. In the villages beyond 5 km from forest areas and situated in the plains region, fuelwood accounts for only 38% of domestic energy requirements; animal dung accounts for 22% and agricultural residues for 40%.

Fuelwood supplies are affected by deforestation and degradation. During 1976-80, the average annual rate of deforestation was 147 000 ha. Since 1980 this trend has been almost arrested through active implementation of legislative measures which severely restrict transfer of land to non-forest uses (e.g., agriculture, mining, hydroelectric dams, etc.). During 1981 the estimated area deforested was only 3,500 ha.

#### b. Government Initiatives

India has a tradition of forest plantations which dates back to mid-nineteenth century and the British colonial service. During the past three decades some 2.9 million ha of plantations have been established in the country of which more than half (1.6 million ha) have a social forestry/fuelwood orientation. The Sixth Five Year Plan (1980/81 to 1984/85) includes a proposal to raise 1.5 million ha of social forestry/fuelwood plantations at an estimated cost of Rs. 3.550 million (about US\$ 400 million). Several programs included in this target are, for example, the establishment of fuelwood plantations in 150 districts out of some 500 districts in the country; the tree for every child program; the social forestry projects.

Social forestry projects in India are receiving substantial

multilateral and bilateral assistance. Table 3 provides a list of the foreign donor assisted social forestry projects. The time horizon of these projects extends beyond the Sixth Plan period.

**List of Foreign Donor Assisted Social Forestry Projects in India**

|     | Donor Agency | State             | Cost of Project<br>(Rs. in million) |
|-----|--------------|-------------------|-------------------------------------|
| 1.  | World Bank   | Uttar Pradesh     | 372                                 |
| 2.  | "            | Gujarat           | 608                                 |
| 3.  | "            | West Bengal       | 348                                 |
| 4.  | "            | Haryana           | 330                                 |
| 5.  | "            | Jammu and Kashmir | 240                                 |
| 6.  | USAID        | Madhya Pradesh    | 400                                 |
| 7.  | "            | Maharashtra       | 430                                 |
| 8.  | SIDA         | Tamil Nadu        | 450                                 |
| 9.  | "            | Orissa            | 225                                 |
| 10. | "            | Karnataka         | 555                                 |
| 11. | "            | Bihar             | 400                                 |
| 12. | CIDA         | Andhara Pradesh   | 560                                 |

Source: FAO

**3. Indonesia**

**a. Current Conditions**

In Indonesia, fuelwood accounts for 70-75 percent of the total energy consumption of which 90 percent is used for household purposes. About 80 percent of the population, essentially rural, depends fuelwood as a source of domestic energy. The average consumption has been variously estimated at 0.7 to 0.86 m<sup>3</sup> per capita per year. In addition, localized, concentrated demand for firewood exists as a result of several small-scale industries, such as lime kilns, brick kilns and tobacco barns, among others.

Fuelwood production in Indonesia is estimated at 133 million cubic meters of which a considerable portion (some 70 percent) is from non-forestry sources since most of the fuelwood demand exists in the very densely populated island of Java. Apart from plantations, the forest resources of Java include the mangrove forests of approximately 40,000 ha. The Outer Islands, including Kalimantan, Sumatra, Irian Jaya, Sulawesi et al., harbor the bulk of the country's forest area of some 120 million ha, however, transportation of fuelwood from these island areas has proved to be uneconomical. Large volumes of logging wastes and wood residues from land clearing remain virtually unused in the Outer Islands. Future domestic fuelwood supplies will continue to come primarily from non-forest areas in Java.

b. Government Initiatives

Since the early 1960's, Indonesia has stepped up its plantation programmes. Of a total area of some 2.7 million ha of plantations (teak, other hardwoods, pine and Agathis), fuelwood plantations amount only to some 300,000 ha. In recent years, Perum Perhutani (a government owned forest management corporation on Java) has accelerated agroforestry oriented multi-purpose tree plantations with emphasis on fuelwood production. In addition, the Directorate of Reforestation and Land Rehabilitation has introduced "line planting" and corridor system" planting in the steep densely populated mountainous areas. Indonesia has acquired considerable experience in agro-forestry systems and has successfully established plantations of such fast-growing fuelwood/fodder species as Calliandra calothyrsus, Leucaena leucocephala, Glyricidia maculata, Sesbania grandiflora et al. It is estimated that during 1980-85, some 250,000 ha of essentially wood-energy plantations will be raised in the country.

#### **4. Nepal**

##### **a. Current Conditions**

Fuelwood accounts for 95 percent of all wood consumption in rural Nepal, with 87% of all energy used coming from fuelwood. The total consumption is estimated at some 15 million m<sup>3</sup>. Estimates capita consumption of fuelwood vary considerably from approximately .5 to 1.2 m<sup>3</sup>. Availability which varies considerably across the country is a major determining factor with regard to consumption levels.

Demand is severely constrained by local supplies and transport problems in mountainous areas. Recent studies indicate that the situation is worsening with the forest line receding, and women and children walking greater distances each day collecting fuelwood directly from the forest and grazing land. Sale of fuelwood by head loads is common practice with major buyers being small-scale industry, urban households and commercial enterprises. The only organized supply is through the government owned Fuelwood Corporation of Nepal. The Corporation has sale depots in major urban areas including Kathmandu, Netaure, Pokhara and several cities in the plains area.

Fuelwood supplies from forest areas will continue to decrease in years to come. Deforestation is taking place at the rate of 84,000 ha per year. One of the major contributors to forest degradation is livestock grazing. Over the past 20 years an estimated 700,000 persons have migrated to the Terai, encroaching on forest areas which are almost totally cleared in the process of resettlement.

##### **b. Government Initiatives**

Plantations on a modest scale were first started in 1964. By the end of 1980, 18,700 ha were raised of which 13,800 ha were industrial plantations. Non-industrial plantations were mainly

47

for soil and water conservation. During 1980/85 the focus shifted to fuelwood plantations. The "Community Forestry Development Project", financed by the World Bank and assisted by FAO/UNDP, has targeted a significant area for fuelwood plantation by 1985: 11,750 ha of new plantations; rehabilitation of 39,100 ha of degraded forest land; and establishment of 0.9 million trees of private lands.

Also under this project, will come some 15,000 improved stoves. The Research Centre for Applied Science and Technology (RECAST), affiliated with the Tribhuvan University in Kathmandu, together with a Special Stove Improvement Unit (SIU) within the Community Forestry Office will play the lead role in the development and introduction of improved stoves.

Other donors in this sector include USAID with two development projects, one in the southern foothills (the Rapti project) and one in the high mountains (RCUP), the Nepal-Australia Forestry Project which was one of the first projects of this genre. These projects include tree planting and technology improvement for energy efficiency. Asian Development Bank recently initiated a fuelwood plantation project in Kathmandu Valley and the UNDP/FAO supported community forestry program has been expanded to cover the Terai districts.

## 5. Pakistan

### a. Current Conditions

Fuelwood consumption in Pakistan in 1980 was estimated to be some 18 million m<sup>3</sup> of which only 0.3 million m<sup>3</sup> represented organized supply from forest areas, mostly in the form of small billets. Approximately the same quantity was generated as waste materials from commercial forest areas and subsequently used as fuelwood.

For people living in the foot-hills, the sub-tropical dry ever-

green forests with their principal species Acacia modesta and Olea cuspidata are a major source of fuelwood. The rivers in forest in the Indus delta and the mangrove forests on the coast of Arabian sea meet the needs of the people living this region. In the semi-arid and arid areas, the shrub vegetation (Acacia, Prosopis, Tamarix, Tecoma and Salvadora) constitutes the major source of fuel. Continuous dependence on these forests has resulted in their degradation. Wood is now so scarce in some areas that the roots of these plants are dug out for fuel. Although the annual rate of deforestation in Pakistan is only 7,000 ha, severe degradation of the forest is occurring in most forest areas. Some 12% of the wooded area of the catchment of Indus river and its tributaries has either been deforested or laid bare by repeated cutting over many centuries. The rural populations dependence on scattered trees in farm fields and on village lands, woodlots and orchards is increasing.

b. Government Initiatives

Compact blocks of irrigated plantations were raised in Pakistan as early as 1866. In 1980 they covered an area of 177,000 ha. Some 10% of the production is utilized for industrial purposes with remainder for fuelwood. In addition, linear plantations along roads, canals and railway lines amounting to some 26,000 ha have been established and also are harvested for fuelwood.

During the last National Development Plan (1978-83), resources directed to the forestry sector increased to Rs 1223 million and a tree planting program for fuelwood production was launched. Attention is sharply focussed on raising public awareness and seeking farmer and community participation in tree planting. Forestry extension units were created in the provinces and mass media such as television, radio and the press, were mobilized in support of tree planting. The number of plants raised in nurseries increased from 38 million in 1976 to 69 million in 1980. The trees planted by general public in non-forested areas rose from 14 million in 1976 to 27 million in 1980. In 1983 USAID signed a

US\$ 30 million project agreement with the government to include an extensive on-farm tree crop program, expansion of irrigated plantations, rehabilitation of older plantations as well as assistance in planning.

## 6. Philippines

### a. Current conditions

The consumption of fuelwood in the Philippines exhibits a pattern similar to other countries of the region. With a large poor and primarily rural population, consumption estimates cite an average per capita consumption of 0.54 m<sup>3</sup> per year. Correspondingly, total annual consumption estimates vary between a low of 25.8 million m<sup>3</sup> and a high of 44.3 million m<sup>3</sup>. In the period 1969-1979, it is estimated that total wood fuel consumption rose by 30 percent or more while total industrial roundwood production declined by one third. Survey data indicate that fuelwood comprises 38-46% of total energy consumption. Although most households use a mix of energy sources, in rural areas 90% or more of the families use fuelwood. In urban areas this percentage drops to 80% or lower depending on the size of the town or city and its proximity to supply sources.

Charcoal production, a relatively common practice, is carried out in small-scale operations in forest areas with the market being primarily the urban areas. Consumers include households, commercial food preparation (e.g. bakeries) and small-scale industries such as tobacco-curing and sugar refining, among others.

The majority of fuelwood consumed in the domestic sector is gathered directly by the consumer. Rural people also collect fuelwood for conversion to charcoal or sale directly in nearby towns and villages. Very little fuelwood collection actually takes place in primary forest and that which does is in the wake of logging activities which generally are remote from population centers. Local secondary forests, mangrove swamps, home gardens

and scattered trees in farm fields provide the major source of supply. The combined effects of shifting cultivation, expansion of farm land area, and firewood collection has stripped many districts of major woody vegetation. In some areas, including parts of the heavily populated Luzon, the drier island of Cebu, and the sugarcane areas of Bohol, denudation is so severe that rural families must rely largely upon agricultural residues, such as coconut palm leaf petioles and husks, sugarcane residues and other scrub material.

#### b. Government Initiatives

Alarmed by the rapid degradation of national forest lands and especially secondary forests and reforestation plantations in watershed areas, the government has initiated several social forestry programs with the goal of assisting rural people in tree planting and in better forest and land management. A widescale reforestation program has been undertaken with the assistance with JICA and FAO among others. Recognizing the problem as basically one of a socio-economic nature, other development assistance agencies, such as USAID, the World Bank, and private voluntary groups such as World Neighbors and the Baptist missionary service, have tackled the problem of fuelwood shortages and forest degradation in the context of rural development through the introduction and development of agroforestry techniques. Independently farmers have established small-scale firewood plantations in response to a developing market for fuel in local towns and factories. In most cases the preferred species planted is the giant variety of Leucaena leucocephala.

A recent interesting development supported by USAID has been the installation of a system of dendrothermal power plants by the Ministry of Energy. These plants are designed to be fired by wood fuel. Plantations of Leucaena leucocephala have been established within an area at a radius of no more than 50 km distant from the proposed sites to provide fuel for these plants. The first plant to be commissioned is located in Mindoro, Occidental Island. The

progress of this development is being noted with keen interest by both the government as well as the private sector in other developing countries in Asia.

## 7. Sri Lanka

### a. Current conditions

Fuelwood consumption estimates for Sri Lanka based on field surveys are limited. Figures from 1980 studies estimate a production of some seven million m<sup>3</sup> of which about 0.7 million m<sup>3</sup> are for industrial use. The recorded production of fuelwood from forest areas is 0.14 million m<sup>3</sup>, providing fuel supplies primarily for the tea estates. Household energy requirements are generally met through unrecorded removals from forest areas, logging and processing wastes, rubber plantations, home gardens, orchards and from agricultural wastes. A private enterprise "Charlanka", a US-Sri Lankan partnership formed several years ago to convert landclearing and logging wastes (especially from the Mahaveli development area) into charcoal using cone shaped steel kilns is now defunct.

Deforestation and forest degradation due to over-exploitation constitute a serious problem and affect the future fuelwood situation in the country. The situation is aggravated by the clearance of large forest areas under the Mahaveli Area Development Scheme, shifting cultivation and the extension of agriculture through encroachment into forest. The average annual rate of deforestation is estimated to be 25,000 ha.

### b. Government initiatives

The cumulative area under plantations in Sri Lanka up to 1980 was 55,000 ha. According to the Annual Administration Report on the Forestry Department for 1980, Sri Lanka has afforested 12,646 ha during 1980. The extent of plantations in 1979 was 8,245 ha; in

1978, 7,019 ha. A nationwide tree planting campaign initiated in 1979 has distributed millions of seedlings to schools, other public institutions and organizations and the public in general. The area planted in 1981 was approximately 3715 ha. These and subsequent plantations in 1982 and 1983 suffered extensive losses due to a severe and extensive drought, especially in the northern districts, in those latter years.

USAID and the World Bank have been the most active donors to date in providing assistance with reforestation. The Upper Mahaveli catchment area and the abandoned areas of previous shifting cultivation have been the target of these efforts. The National Agricultural Development and Settlement Authority and various integrated rural development projects (Hambantota, Matara and Nuwara Eliya ) have also been involved in tree planting. Under the World Food Program in 1981, fuelwood plantings were to increase the area under trees to a maximum of 10 percent of the total area of tea gardens to meet the requirements of factories and the domestic demand of estate workers. Private voluntary organizations, such as Nation Builders, have also been active in this arena. With the assistance of the Asian Development Bank, a Community Forestry Programme has been initiated recently in the southern districts of Badulla, Nuwara Eliya, Kandy and Matale. In these four districts, there is a serious shortage of fuelwood in addition to an inadequate forest cover essential to protect the catchments of the major rivers in the country including the Mahaveli.

## 8. Thailand

### a. Current conditions

The rural population of Thailand, some 75 percent of the total population of 48 millions, is mainly dependent on fuelwood as a source of domestic fuel. The current production of fuelwood/charcoal is about 33 million m<sup>3</sup> of which a large part is derived from

forest areas. Much of this removal, however, goes unrecorded. In addition to use as domestic fuel, fuelwood and charcoal constitute the major source of fuel for many rural-based traditional industries such as producing earthenware and ceramic goods, tobacco, lime, bricks, rubber, coconut palm sugar, tools and other items. Many new factories, such as the fish meal plant, and distilleries, also use wood fuel in their boilers. Several wood products industries have installed wood-fired boilers to utilize process wastes.

Substantial quantities of charcoal is consumed in Bangkok, essentially for domestic as well as commercial purposes. It is produced extensively in the rural areas around the city, at a radius of 200 km and beyond. A 1981 survey showed that of the 50 villages sampled, 48 produced charcoal, if only on a small scale. Larger scale facilities operating a battery of kilns, using mainly mangrove and rubber wood, also exist.

The mangrove forest (313,000 ha) at the river mouths and along the coast of southern and eastern Thailand are managed principally for the production of charcoal. The scrub forests (500,000 ha) in dryer northeastern and western Thailand are heavily exploited for fuelwood. Many villages situated close to the dry dipterocarp and giped deciduous forests depend on these forests for fuelwood. In addition to agricultural expansion and shifting cultivation, fuelwood removals are a serious cause of deforestation and degradation of the forest resources of the country. The annual rate of deforestation is estimated at 333,000 ha.

#### b. Government Initiatives

The Royal Thai Forestry Department assisted by FAO has been involved for several years in a program of rural development in northeastern Thailand which has involved reforestation, watershed rehabilitation and the settlement of shifting cultivators in "forest villages". The purpose of the forest village scheme has been not only to settle the itinerant hill

farming population but also to introduce and develop the technologies by which the local people can again a livelihood without destruction to the local forests.

Another important program which has been successful in increasing the fuelwood available in local villages has been the village fuel lot scheme assisted by USAID. Introduced both in the context of a rural energy development program and community forestry program, this program has introduced fast-growing tree species (Eucalyptus, Leucaena et al.) into both block and line plantings as well as intercropping schemes.

In summary, the above review of conditions and activities indicates that a lot has been done and is being done to attack the problem of fuelwood shortages and forest degradation in the developing countries of Asia. Nevertheless, much more remains to be done especially with regard to addressing farmers needs and on-farm tree planting. Better management of government forests, the establishment of industrial fuelwood plantations, the promotion of fuel conservation, the development of energy efficient technology and the development of non-polluting alternative fuels and energy sources are additional areas which deserve attention in this context.

Much has been learned from projects undertaken to date. This information has received wide dissemination is being utilized in the design of new projects. The interwoven problems of energy and forestry development have not yet found a solution, and continued and concerted effort is required to prevent the loss of the limited successes to date. Forestry and energy issues affect all rural development efforts and should be encompassed in all rural development projects.

#### **D. Foreign development assistance in the forestry sector in Asia**

A diverse group of foreign institutions and agencies are involved in development assistance to the forestry sector in Asia. The major international multilateral agencies involved in this sector include the World Bank, the Asian Development Bank (ADB), the United Nations Development Programme and its several related agencies including FAO and the World Food Programme. Smaller but often equally effective international groups working on projects with a forestry focus or forestry components include the Catholic Relief Services and CARE. An even broader spectrum of bilateral foreign aid agencies, both government sponsored and private voluntary agencies, are involved in forestry projects. The activities of any one agency however, may be limited to a few individual countries or a group of countries for a variety of reasons. The funding levels and sources, the objectives, both stated and unstated, and the operational procedures of the many aid agencies often differ substantially. Formal cooperation among the members of this group is on the whole poor.

The three major donors in the forestry sector are the UNDP, the World Bank and AID. Tables 4, 5 and 6 summarize the activities of each of these donors. In the past few years the Asian Development Bank also has developed into major donor in Asia with the initiation of social forestry projects in Bangladesh and Sri Lanka, a fuelwood plantation project in Nepal and a forest management project in Indonesia. As may be noted from a review of Tables 4, 5 and 6 and their supporting Appendix 3, the majority of funding has been directed to South Asia.

The upsurge in assistance to the forestry sector over the past ten years has resulted from the realization that forest destruction and degradation was resulting in environmental problems which put at jeopardy many of the agricultural and infrastructure projects which had been developed in the previous decade. Recognition that on-going forestry programs had not addressed the needs of the rural people led to the development

Table 4. Summary of AID Assistance to the Forestry Sector in Asia

| Country                     | Number of Projects* |          | AID Projects     |               | Funding Commitment | Percent      |
|-----------------------------|---------------------|----------|------------------|---------------|--------------------|--------------|
|                             | Current             | Proposed | Current          | Proposed      | Total**            |              |
|                             |                     |          | -----\$'000----- |               |                    |              |
| <b>1. South Asia</b>        |                     |          |                  |               |                    |              |
| Bangladesh                  | 1                   | 2        | 300              | 13,700        | 14,000             | 6.7          |
| India                       | 3                   | 2        | 57,300           | 17,000        | 74,300             | 35.4         |
| Nepal                       | 3                   | 1        | 10,100           | 3,000         | 13,100             | 6.2          |
| Pakistan                    | 1                   | 0        | 30,000           | -             | 30,000             | 14.3         |
| Sri Lanka                   | 2                   | 0        | 15,450           | -             | 15,450             | 7.4          |
| Sub-total                   | 10                  | 5        | 113,150          | 33,700        | 146,850            | 70.0         |
| <b>2. Southeast Asia</b>    |                     |          |                  |               |                    |              |
| Burma                       | 0                   | 1        | -                | n.a.          | -                  | -            |
| Indonesia                   | 4                   | 0        | 5,900            | -             | 5,900              | 2.8          |
| Philippines                 | 3                   | 0        | 31,718           | -             | 31,718             | 15.1         |
| Thailand                    | 3                   | 1        | 2,087            | n.a.          | 2,087              | 1.0          |
| Sub-total                   | 10                  | 2        | 39,705           | -             | 39,705             | 18.9         |
| <b>3. Regional Projects</b> | 1                   | 2        | 3,000            | 20,180        | 23,180             | 11.1         |
| <b>T O T A L</b>            | <b>21</b>           | <b>9</b> | <b>155,855</b>   | <b>53,880</b> | <b>209,735</b>     | <b>100.0</b> |

Notes: n.a. = not available

\* Refers to all projects with forestry focus or forestry components.

\*\* Forestry-related components only.

Source: Appendix 1.

Table 5.

**Summary of UNDP-assisted Forestry Projects in Asia**

| Program                                      | AID Host<br>Countries | Regional<br>Projects | All Asia<br>Projects |
|--|-----------------------|----------------------|----------------------|
| US\$ Million                                 |                       |                      |                      |
| <b>A. UNDP/FAO Projects</b>                  |                       |                      |                      |
| 1. Operational                               | 26.45                 | 2.89                 | 47.63                |
| 2. Proposed                                  | 17.96                 | 1.88                 | 26.29                |
| <b>B. FAO/Trust Fund Projects</b>            |                       |                      |                      |
| 1. Operational                               | 0.34                  | 2.05                 | 2.99                 |
| 2. Proposed                                  | 11.18                 | 5.48                 | 22.55                |
| <b>C. FAO Technical Cooperation Projects</b> |                       |                      |                      |
| 1. Operational                               | 0.50                  | -0-                  | 0.68                 |
| 2. Proposed                                  | 0.23                  | 0.20                 | 0.56                 |
| <b>D. World Food Programme</b>               |                       |                      |                      |
| 1. Operational                               | 166.88                | -0-                  | 201.42               |
| 2. Proposed                                  | n.a                   | n.a                  | n.a                  |
| <b>TOTAL:</b>                                | <b>223.54</b>         | <b>12.50</b>         | <b>302.12</b>        |

Note: Column 3 also includes the projects in Non-AID assisted countries.

Source: Appendix

DOC.5858A

Table 6.

**SUMMARY OF WORLD BANK LENDING FOR FOREST DEVELOPMENT  
BY REGION, 1963 - 1983**

| Region                                      | Total Forestry Lending |            | Projects  |            |
|---|------------------------|------------|-----------|------------|
|   | US\$ Million           | Percent    | Number    | Percent    |
| 1. Latin America and Caribbean (11)         | 36                     | 4          | 12        | 14         |
| 2. Europe, Middle East and North Africa (8) | 239                    | 25         | 11        | 13         |
| 3. Africa                                   | 314                    | 33         | 36        | 42         |
| a. West Africa (10)                         | 133                    | 14         | 18        | 21         |
| b. East Africa (9)                          | 181                    | 19         | 18        | 21         |
| 4. Asia                                     | 390                    | 38         | 27        | 32         |
| a. South Asia (6)                           | 289                    | 30         | 16        | 19         |
| b. East Asia and Pacific (4)                | 81                     | 8          | 11        | 13         |
| <b>Total</b>                                | <b>959</b>             | <b>100</b> | <b>86</b> | <b>100</b> |

- Note:**
1. Number of countries in region with projects shown in ( ).
  2. Excludes lending for pulp and paper industry development amounting to a total of US\$ 147.2 million during the same period.
  3. Totals may not add due to rounding.

**Source:** Derived from Annex 1 of "Review of World Bank Financed Forestry Activity, FY 1983", June 30, 1983

of the concepts of social forestry and agroforestry which became the guiding element in so many of the forestry projects of the last decade. Lacking much previous experience with foreign donor assistance projects, and deficient in skilled manpower and infrastructure, the absorption capacity of host country forestry sector has been relatively low. Efforts to redress this situation have begun to develop as manpower shortages threaten to hamstring the forestry development efforts initiated in recent years. The present concern of the government of India regarding manpower shortages is a case in point.

The interest of these donors has focused on the two major areas, primarily watershed rehabilitation and the development of private or community tree crop resources. This latter has been with the intent to increase the supplies of income as well as to provide fodder, fruit (for domestic consumption or sale) and pole timber. To address these problems various methods were developed almost all of which have enjoined the participation of the local populace. Nomenclature has varied — social forestry, community forestry, agroforestry, farm forestry — but almost all have the goal of increasing forest and tree crop resources and improving their management. Two corollary objectives have been to increase the general knowledge regarding the care and benefits of tree crops and assist the forest department in being more responsive to the needs and constraints of the rural population.

The primary elements of any foreign development assistance project falls into essentially four major categories: technical assistance; capital investments, i.e., equipment, vehicles and construction; staff training; and materials. The type of activities undertaken in any project have tended to be similar, focusing primarily on tree establishment. Recently with the growing emphasis on the the social aspects of forestry, increased attention has been given to investment in support to extension activities. The funds set aside for research and education vary by donor in a reflection of the prevailing attitude of the various donor agencies regarding these elements.

-55-

The success of the various donor programs has been varied. As discussed in the previous section, they have not been as successful as was anticipated. Moreover, the success of these projects in stemming forest degradation and environmental destruction cannot be correlated directly with the level of funding levels of the various project. Given the poorly developed nature of forestry institutions in most developing countries, small, focused, intensively managed projects have been more effective than broadly reaching, lavishly funded projects, especially given the novel approach of many of the socially or community oriented forestry development projects.

#### **E. AID responsiveness and effectiveness**

AID headquarters staff in Washington were probably the first to become aware of the emerging recognition of the development needs in forestry in the 1970's. The few professional foresters in the Agency were located for the most part in Washington, D.C. Non-foresters probably became aware of forestry issues during the development of the environmental movement and the energy crisis. When researchers examining the effects of the dramatic rise in petroleum prices turned their attention to the Third World, they discovered a new type of energy crisis. The energy crisis in the developing countries centered on the increasing scarcity of fuel-wood which had developed with the overcutting of forest. Although forest destruction was the result of many processes including some foreign donor supported development projects. The resulting environmental degradation, however, threatened many of the development investments, especially in agriculture and water associated infrastructure already in place.

The awareness of these environmental problems was to reach Washington initially through the professional linkages of the individuals and their ready access to information. The awareness at the Mission level was slower to develop for converse reasons — the lack of professional connections and the limited availabi-

lity of information. In AID Washington, both energy and forestry developed widespread support which resulted in the initiation of several projects.

Mission programs have traditionally been focussed on the agricultural sector. The concentration of expertise in this area plus the generally poor image of the forestry sector that prevails, due in part to traditional practices and the damning reports from various environmentalists have prompted many Missions to shy away from involvement in the forestry sector. Overall the Missions lacked the capabilities, the contacts and the confidence to move into this new area. Where interest did develop for whatever reason, the early projects exhibit understandable problems related, a generally poor understanding of the capabilities and constraints of this sector. Unrealistic expectations as to the rate of institutional change to be accomplished, overestimation of the capabilities of American technical expertise supplied, oversimplification of the problems and poor communication between the various project participants were some of the problems encountered.

With AID headquarters' recognition of these shortcomings, the Forest Resources Management Project was initiated. With technical backstopping by the US Forest Service and the placement of the forestry advisors within each region, this project was

designed to address the problems faced by the Mission staff in the development and implementation of the forestry activities. The expansion of the forestry program and the addition of several new projects, including two new countries, in Asia is testimony to the success of this project in the Asia region.

Over the past three years, Mission responsiveness to forestry problems and issues has increased substantially. Communications and working relationships between the USAID Missions and the host government forestry community have improved in almost all cases. Recognizing the difficulty of having one individual responsible for backstopping a region as geographically, culturally and eco-

logically as diverse as Asia, the RFA made it a point to urge Missions with significant involvement in the forestry sector (i.e., Pakistan, India and the Philippines) to secure in-house expertise through local hire contracts, personal services contracts or direct hire designation. These Mission followed this advice and the improvement in their program is widely recognized. Some Missions still hesitate, however, to move into the forestry sector; it now appears that this resistance is due mostly to lack of funds, staff cutbacks and previously determined priorities, including a consolidation of commitment in a topical sense. Ultimately, it is the Mission Director who makes this decision. The success of AID projects have on the whole been about as successful as those of other donor agencies. Many of the larger and more ambitious project are still in the early stages of development, however. The effectiveness of the AID forestry projects and components may be expected to improve as the issues noted in the sections above are recognized and addressed in on-coming projects. Attention to operational bottlenecks (noted in I-D above) within the Agency could also improve project performance. In addition further work is needed to increase Mission staff awareness of the problems, needs and potential of the forestry sector. Keen attention should be paid to securing capable and experienced expertise to implement these projects. It should be noted that much of what promotes the bureaucracy constrains program development and successful project implementation. A clearer focus on project goals would improve the effectiveness and the efficiency of AID field operations in forestry.

### III. Future directions in forestry in Asia

The widespread interest in forestry which has developed over the past few years appears strong enough to continue. Despite the geographical remoteness of forestry operations, the fortunes of forestry sector are, however, not independent from the development of other sectors and the nation as a whole. Influences of international trade in tropical timber, domestic construction, energy prices, among other factors, affect the demand for forest products. On the other hand the development of infrastructure, the population expansion in traditional societies, the expansion of livestock production, resettlement schemes, expansion of estate crops, all look to the forest as the source of land for expansion purposes. As the pressure on resources becomes more intense, the interest in forestry and the responsibility of the forest administration will grow.

Despite its increasing importance, forestry will continue to face competition for funds with the "basic needs" sectors, such as agriculture, health and education. With the level of funding of most governments, both donors and receivers, continually under pressure to be reduced, various developing country governments are becoming more concerned about their loan responsibilities and future payment commitments. This concern has increased government interest in looking for productivity improvements in the forestry sector. Overall, however, the opportunities for donor assistance in this sector should remain strong. As until recently investment in this sector has lagged behind that of other sectors, the rewards to investment in this sector may be expected to be considerable. Given forestry's relative lack of sophistication in comparison with agriculture, realizing these developments will take concerted effort and commitment.

#### A. Trends in host country policies and programs

Over the past decade new concepts have developed in forestry which have significantly changed the outlook of forestry and

enlivened interest in this sector. Certain of these ideas continue to develop whilst new concerns emerge. Other issues which have remained at the margin of concern are moving into the limelight as precepts of the past are being questioned.

Four major themes which continue to elicit substantial interest and are steadily developing conceptually are "social forestry", "agroforestry", fuelwood and watershed conservation.

1. Social forestry with its corollary community forestry is a concept that has grown more sophisticated as the individual programs in the various countries have developed. Initial projects of this type evidenced an attitude gospel delivery. It was finally recognized, however, that better forest management required more than a transfer of silvicultural knowledge and admonition to do the right thing. Involving people in the management and decision-making with regard to forest resources is required. Distribution of benefits and costs has proved a key factor both at the village level as well as the institutional level. In the future attention will be given to increasing the sophistication as well as the reach of these programs.
2. Agroforestry, continues in a process of definition and experimentation. Data is being collected (ICRAF) on agroforestry systems which yield information to clarify our understanding of the concept as well as dispel some myth, new and old, about the relationship of tree crops and agricultural crops. Silvi-pasture and aqua-silviculture are corollary terms which also have a growing set of followers. Intersectoral interdisciplinary cooperation and collaboration and coordination with agriculture and horticulture and animal husbandry continues to be poor. Greater focus on field activities is required to clarify the potential and options of this activity especially in Asia.
3. Wood fuel is a subject which hit the newstands almost ten

years ago. The energy crisis has developed into a problem which has not proved as easy to eradicate as expected. Indeed, the search for ways in which to expand fuelwood production spawned the concepts of social forestry and agro-forestry. The numerous investigations of the past several years have indicated that the structure of the demand and supply for wood fuel is more complex than at first envisioned. With this realization more attention will likely be given to investigations of the market demand and distribution with the idea of developing supply sources to meet the needs of specialized markets.

4. Watershed conservation is a concept that dates back several centuries and indeed was the subject of some of the first forest regulations in Europe (France, 13th century). These concepts have developed as a result of concern for environmental degradation and the recognition of the importance of the forest in soil conservation and the regulation of the water regime. The first watershed projects focused on soil conservation and land rehabilitation through physical adjustments to the landscape, such as reforestation, terracing, construction of drainage channels. In recent years planners have recognized that watershed rehabilitation and management must address the basic issue of appropriate land use, often a element of conflict between several departments of government.

As may be noticed all the above concepts are related, in essence through a recognition of the needs of local people, especially for "so-called" minor forest products, and of the influence of people on forest conditions. With rapidly increasing population in the developing countries, the requirements for these products will continue for many years and therefore continue to dominate the forestry sector for some time to come.

In the newly developing concerns in forestry, we begin to see the reemergence of past issues some of which have lie dormant

since the end of the colonial era. The subject of management is one such issue. Forest management of natural forests, plantation forests as well as farm tree crops is receiving increasing attention in the forestry community realization spreads that present management systems, in their design and/or implementation, have not lived up to expectations. Other topics which are currently receiving attention and which hold promise of receiving stronger support in the future are policy, extension, research, education and training. These issues which were previously perceived as peripheral to project needs are now seen to be critical if the forestry programs undertaken in recent years are to continue to develop and strengthen.

Another subject at the margin of discussion yet deserving much greater support, is forest industry development, both in terms of timber as well as non-timber products. Forest industry, together with its backward and forward linkages, should be developed to strengthen growth in rural areas. In this context it should be noted that in most countries relatively little attention has been devoted to the production of minor forest products; the development of small-scale rural industries processing such goods could be important source of both jobs and income. Moreover by increasing the number of jobs generated by the forest, local interest in protecting this resource would be enhanced.

An important issue that is emerging as a result of policy studies is the subject of administrative reform. Much of the problems attributed to forest policy actually are the result of the bureaucratic structure and processes associated with forest administration. Reorganizations in some forestry departments are attempting to correct these deficiencies. The need for in-service training, especially in the areas of administration and management not yet been fully recognized.

Topics which appear to lack of support at present include inter-sectoral cooperation, in-service training, trade in forest products, and public relations. Cooperation between forestry and

other governmental departments, for instance, agriculture, education and industry continue to be poor. To date, in-service training for forestry staff has been mainly ad hoc in response to specific project requirements. A regular program of in-service training should be made available to forestry staff across the board to upgrade and update the forestry department staff skills. Trade and marketing is another topic which must be addressed if LDC products are expected to compete and develop their potential in international markets. Again many of the problems in this area can be traced back to poor management.

Finally, in developing countries, the forestry sector for whatever reasons has a poor public image. It should acknowledge this fact and take steps to increase its goodwill through civic activities. This could be an important step in changing public attitudes to forestry and the role of forestry in society. In this context urban forestry should be mentioned; urban forestry programs offer opportunities for employment, improved environmental conditions and the production of firewood within the urban setting where the population of unemployed urban poor continues to grow in most developing countries.

#### **B. Major constraints and issues**

The forestry sector in most if not all developing countries in Asia exhibit general characteristics, largely a historical legacy, which often inhibits the development programs of this sector. Although often repeated, they are as commonly shrugged aside and forgotten with the result being frustration and dashed expectations in project implementation. The strength of these elements vary from country to country and affect various projects differently. Nevertheless, they continue to exist and should be heeded and thus bear repeating. The more important of these issues can be summarized as follows:

- traditionally foresters have held a policing role with respect to forest land; in a clash between individual or community claims versus states rights, the forester was

the enforcement official. Consequently, there is often a poor rapport between the rural community and the forest officials;

- the foresters themselves have been involved in corruption regarding the exploitation of the forests;
- conflict between forestry and other sectors (agriculture, public works) over land has continued with competition extended to the conflict over national budget allocations;
- low investment in forestry over several decades has left forestry lagging in all institutional aspects, e.g., facilities, research, communications and education;
- with regard to social forestry programs and the reforestation schemes, the local population which is asked to contribute their efforts in participation are often the poor and marginal farm families, least able to afford this commitment, forego the use of the land or shoulder the risk involved in investing in tree crops;
- longer payback periods associated with almost all biological aspects of forestry, including research as well as project implementation, is a deterrent to investment.

Although from a biological point of view it may seem at first glance that forestry is merely agriculture writ large, a closer examination of issues such as raised above will highlight significant differences between the two disciplines. Ecologically, institutionally, culturally as well as from the point of view of relevant time horizons, forestry differs from agriculture. We should not expect forestry to react and respond as agriculture might.

### C. Opportunities for foreign donor assistance

The opportunities for investment in the forestry sector are almost unlimited. The subjects discussed in section III-A highlights topics of on-going and emerging interest to the developing countries. Numerous other subjects of more focused interest also provide investment opportunities for donors. These include fire

control technology; nursery techniques; wood energy technology; fast-growing species; planning and budgeting; research management; seed technology and infrastructure facilities, including research laboratories and libraries.

The danger in grasping at these smaller projects, however, lies in the possibility of fragmenting the national forestry development program. Without strong direction and coordination of donor assistance, there is the risk of distorting sectoral development. The forestry sector has much to contribute and many roles to play in the context of national development. The donor community should work with the host country to develop a rational development plan, integrated with the development plans of associated sectors, with logical priorities and scheduled program. With a firm policy and planning basis, there is a greater opportunity for tightly focused projects to have a beneficial impact.

Across the board forestry has been under-funded in the development process over the past several decades. Consequently, in virtually every developing country, forestry lags in almost every aspect. To repair these deficiencies will require a solid, steady, long-term commitment from the donor community. With an increasingly restricted and limited funds, donors should examine carefully their capabilities and resources not only singly but as a whole so that the best use made be made of scarce resources. Duplication of efforts is lamentable given the overall shortage of funds available to this sector. Better cooperation and collaboration among donors should be encouraged initially with the sharing of knowledge and expertise. Joint projects, parallel projects and linked projects should also be given more consideration.

#### **D. Recommendations for future AID program directions**

With regard to possible future directions for the AID forestry program in Asia, one of the most important aspects to be taken into consideration is staff capabilities especially at the Mission level. Given the restrictions on hiring, the availability of expertise in the forestry profession should also be taken into consideration. A third element to consider is the capabilities of other donor agencies involved in the forestry sector. Comparative advantage in any one area lies in being able to draw upon resources and personnel developed previously or recognized internationally as being of high quality.

As noted in section III-A above the forestry topics which are likely to sustain the highest interest over the coming years are social forestry, agroforestry, wood fuel and watershed conservation. In some way or other and in various countries, AID is involved in all of these subjects, as are the other major forestry donors. The question then is should we continue on the present ad hoc basis or attempt to focus on areas of strength and if so, where does AID comparative advantage lie.

Apart from the element of stove technology and perhaps marketing, it appears that most of the problems associated with wood fuel supplies can be subsumed under the broader subject social forestry. Similarly agroforestry also is closely allied to social forestry. Although USAID/India has been pursuing social forestry for several years, the majority of experience in this subject lies with the multilateral agencies and on a much smaller, and more successful, scale with the private voluntary agencies. Agroforestry which has been introduced in a minor way in many USAID rural development and watershed projects is supported most substantially through the AID grant to the International Center for Research in Agroforestry (ICRAF). Information developed through this medium should assist not only AID projects but all agroforestry and related social forestry projects. Finally watershed is a project area that several Missions have been involved in for many years. In contrast with agroforestry and social forestry, it

is a subject in which the United States has excellent experience and expertise both in the context of forestry and agriculture. Even now that the demand for field technical expertise has been replaced to some extent by a need for planning and administrative expertise, the US has excellent personnel to offer.

The importance of good available technical expertise should not be underestimated. It is critical for project implementation as well as design, especially in those Missions which lack in-house forestry expertise. To short-change a project in this aspect not only increases the management burden on the Mission but results in the inefficient and even in some instances the inappropriate expenditure of funds.

Other subject areas in which the US and AID have a comparative advantage both with regard to previous experience as well as professional expertise are the following:

- forest policy and administration
- research design and management
- forestry extension
- in-service training
- education
- forest industry development

The drawback with these subjects is that, except in the case of forestry extension, the beneficiaries are not the farmers in rural areas. To ignore the institutional development needs of the LDC countries, however, is to limit the effectiveness of the entire forestry program. Projects directed at the ground level, so to speak, will continue to be essentially of an ad hoc basis, unless a framework is developed in which individual donor projects may be replicated and supported following donor departure.

Future program directions in forestry should reflect the interests of the Mission programs and capabilities as well as US and AID capabilities and national concerns. The selected topics should also evidence a concern for efficient program management recognizing the constraints of the LDC forestry sector overall and AID in particular.

Aid Asia Projects with Forestry Focus or Forestry Component

(Revised 1/10/85)

| <u>Country &amp;<br/>Project Title</u>                        | <u>Project No.</u> | <u>Description</u>   | <u>Status<br/>Period</u> | <u>USDA<br/>Project Costs (\$000)</u> |                 | <u>USDA<br/>Project<br/>Officer</u> | <u>Cooperating<br/>Government<br/>Agency</u>                |
|---|--------------------|--|--------------------------|---------------------------------------|-----------------|-------------------------------------|---|
|   |                    |  |                          | <u>Total</u>                          | <u>Forestry</u> |                                     |   |
| <u>Regional Projects</u>                                      |                    |  |                          |                                       |                 |                                     |   |
| Forestry/Protected<br>Research and Development<br>(S&T/PM)    | 930-9547           | Network of protected species<br>research and development   | PP<br>85-95              | (19,600)                              | (19,600)        | Ray McFadden<br>S&T/PM              |   |
| Forestry Research and<br>Development Project<br>(Asia Bureau) | 490-0276           | Promote the forestry research,<br>especially of multipurpose<br>tree species, and information<br>networking.   | PP<br>85-89              | (2,900)                               | (2,900)         | Sam Ichard<br>Asia/TN               | Forestry C.,<br>Bangkok                                     |
| ADBAM Watershed Project                                       | 490-0290.03        | Develop an ADBAM<br>Watershed management<br>research and information network<br>with SFD Philippines as lead<br>country institution  | Ongoing<br>83-89         | 3,000                                 | 3,000           | B. Blackman<br>USDA/Manila          | Bureau of<br>Forest<br>Development<br>(BFD)                 |
| <u>Country Projects</u>                                       |                    |  |                          |                                       |                 |                                     |   |
| <b>BANGLADESH</b>   |                    |  |                          |                                       |                 |                                     |   |
| 1. Agricultural<br>Research II                                | 300-0051           | This project supports inter-<br>disciplinary training and<br>systems research. It is<br>beginning to sponsor research on<br>multi-purpose fast-growing trees.  | Ongoing                  | 17,300                                | 300             | James Hale                          | Bangladesh<br>Agricultural<br>Research<br>Council<br>(BARC) |
| 2. Rural Energy Sector  | 300-0057           | Development of conventional<br>and nonconventional<br>energy sources. Forestry<br>emphasis: enhancement of<br>fuelwood availability,<br>improvement of traditional<br>methods and introduction<br>of appropriate technology<br>to conserve fuel.   | PIB<br>84-90             | (20,000)                              | (2,000)         | Graves Thompson                     |   |
| 3. On-farm Forestry<br>Development                            | 300-0062           | Development of capability within<br>Min. of Agriculture to provide<br>support and assistance to farm<br>families to increase production<br>and/or enhance returns from<br>cultivation of trees, bamboo<br>and other non-traditional<br>farm crops. | PP design<br>85-92       | (11,700)                              | (11,700)        | J. Hale                             | BARC,<br>Forest<br>Research Inst.<br>(FRI)                  |

AID Asia Projects with Forestry Focus or Forestry Components

| Country &<br>Project Title                                | Project No.      | Description   | Status<br>Period    | USAID<br>Project Costs (000) |          | USAID<br>Project<br>Officer | Cooperating<br>Government<br>Agency  |
|---|------------------|---|---------------------|------------------------------|----------|-----------------------------|--|
|   |                  |   |                     | Total                        | Forestry |                             |  |
| <b>SIAM</b><br>1. Agriculture Research<br>and Development | None<br>483-0012 | An agricultural research<br>project which may include<br>component on agroforestry and<br>on-farm tree crops  | PP design<br>65 - 7 |                              |          | C. Simliao                  |  |
| <b>FIJI</b>   | None             |   |                     |                              |          |                             |  |
| <b>INDIA</b>  |                  |   |                     |                              |          |                             |  |
| 1. Agricultural Research                                  | 306-0470         |   |                     |                              |          |                             |  |
| 2. Alternative<br>Energy Resources                        | 306-0470         | Technical collaboration<br>in the areas of coal<br>technology, transport<br>efficiency, and biomass<br>conversion. Forestry<br>Component: study biomass<br>production and conversion.   | Ongoing<br>81-86    | 3,000                        | 2,300    | Diann Guile<br>PD           | Min of Energy,<br>Min of Science<br>and Technology   |
| 3. Madhya Pradesh<br>Social Forestry                      | 306-0475         | Community-based forestry<br>for fuelwood and other<br>forest products, with a<br>goal of reaching 5,000<br>villages and of planting<br>115,000 ha. Institution<br>building. Training and<br>research components.<br>Emphasis on public lands. | Ongoing<br>81-87    | 25,000                       | 25,000   | Hal Fisher<br>AM            | Min of Agr.,<br>Forestry Div.  |
| 4. Maharashtra<br>Social Forestry                         | 306-0478         | Strengthening of social<br>forestry extension,<br>especially village woodlot<br>organization and management<br>with goal of reaching<br>4,300 villages and planting<br>81,000 ha. of trees.<br>Emphasis on private lands.                     | Ongoing<br>81-90    | 30,000                       | 30,000   | Hal Fisher<br>AM            | Min of Agr.<br>Forestry Div.   |
| 5. Forestry Watershed<br>Management Training              | 306-0480         | Technical and, financial,<br>assistance to the major forestry<br>research institutes and to<br>selected state level colleges<br>to upgrade training and research<br>in forestry and watershed<br>management.                                  | PIB<br>84-89        | (6,000)                      | (6,000)  | Steve Jackson<br>AM         | Forestry<br>Research Insti-<br>tute and<br>College,<br>Dehra Dun and<br>Council of<br>Agricultural<br>Research |

USAID Asia Projects with Forestry Focus or Forestry Component

| <u>Country &amp;<br/>Project Title</u>         | <u>Project No.</u> | <u>Description</u>   | <u>Status<br/>Period</u>   | <u>USAID<br/>Project Costs (000)</u> |                 | <u>Project<br/>Officer</u> | <u>Cooperating<br/>Government<br/>Agency</u>                              |
|--|--------------------|--|----------------------------|--------------------------------------|-----------------|----------------------------|---|
|  |                    |  |                            | <u>Total</u>                         | <u>Forestry</u> |                            |   |
| 6. Hill Areas<br>Land and Water<br>Development | 306-0409           | Rehabilitation of hill area<br>agricultural production.<br>Forestry component:<br>afforestation for watershed<br>improvement.  | PP<br>final draft<br>84-88 | 134,000                              | 111,000         |                            | Min. of<br>Irrigation/<br>Min of Agr.                                     |
| 7. Agricultural<br>Research                    |                    | Agroforestry component<br>(not yet implemented)  | Ongoing                    |                                      |                 | Don Striker<br>AG          | Min of Agr.   |
| <b>INDONESIA</b>                               |                    |  |                            |                                      |                 |                            |   |
| 1. Citanduy II                                 | 497-0201           | Institution building to<br>design and implement<br>a comprehensive watershed<br>management program in Java.<br>Forestry component:<br>watershed reforestation<br>of 42,000 ha.   | Ongoing<br>80-84           | 22,050                               | 3,000           | P. Gilicopio               | Ministry of<br>Public Works,<br>Agriculture,<br>Home Affairs,<br>Forestry |
| 1. Provincial Areas<br>Development Project     | 497-0264           | A community-level<br>initiated program through<br>which villages generate<br>their own project ideas. Two<br>areas, Madura and Timor, have<br>initiated soil erosion control<br>projects where <u>Leucaena</u> is<br>planted on the contours to form<br>natural terraces and to<br>provide fodder, green manure<br>and fuelwood. | Ongoing<br>78-79           | 41,300                               | n.a             | D. Sengler                 | USAID   |
| 3. Applied Agriculture:<br>Research            | 497-0302           | Development of research capabi-<br>lities in food crops, livestock<br>fisheries, industrial crops and<br>forestry. Forestry component:<br>Forestry research institution<br>building (S. Kalimantan) and<br>staff training.   | Ongoing<br>80-85           | 25,900                               | 2,500           | A. Gordon                  | Agency for Agric.<br>Dev. & Dev;<br>Forestry Dev.<br>and Dev. Board       |

AID Asia Projects with Forestry Focus or Forestry Components

| <u>Country &amp;<br/>Project Title</u>   | <u>Project No.</u> | <u>Description</u>   | <u>Status<br/>Period</u> | <u>USAID<br/>Project Costs (\$1000)</u> |                 | <u>Project<br/>Officer</u> | <u>Cooperating<br/>Government<br/>Agency</u>                        |
|--|--------------------|--|--------------------------|---|-----------------|----------------------------|---|
|  |                    |  |                          | <u>Total</u>                            | <u>Forestry</u> |                            |   |
| 4. Pasigpakan Energy Research Laboratory | 497-0333           | Provides critical technical and commodity inputs for the development of a national laboratory that will focus on coal, biomass, and solar technologies. Possibility studies of wood-based energy systems and demonstration units of tree plantations may be undertaken.                                    | Ongoing<br>82-89         | 11,750                                  | n.o.            | Don O'Riordan              | Min. of Energy and Power  |
| 5. Upland Agriculture and Conservation   | 497-0311           | Improvement of upland farming systems with stabilization of land including use of agroforestry systems. Joint project with IRR. Forestry component: applied research and pilot samples with on-farm tree crops.  | Ongoing<br>84-91         | 10,000                                  | n.o.            | P. Gillespie               | Min. of Forestry, Div. of Reforestation and Land Rehabilitation     |
| <b>PHIL</b>                              |                    |  |                          |   |                 |                            |   |
| 1. Rural Area Development, Napati Zone   | 367-0129           | Increase, broaden, and diversify level of economic and social activity. Forestry component: institution building, watershed improvement, community forestry, establishment of ± 9,000 ha. of plantations.  | Ongoing<br>80-85         | 26,700                                  | 3,200           | Carl Butte                 | Min. of Panabtoy and Local Development                              |
| 2. Resource Conservation & Utilization   | 367-0132           | Arrestment of environmental degradation in two watersheds. Forestry component: establishment of tree nurseries, village plantations, and improved stove technologies. Plantation of 10,000 ha. for fuelwood and watershed protection. Development of Institute of Renewable Natural Resources for training | Ongoing<br>80-85         | 27,500                                  | 4,500           | George Taylor              | Min. of Forests Dept. of Soil Conservation and Watershed Management |

**Best Available Document**

AID Aids Projects with Forestry Focus or Forestry Components

| <u>Country &amp;<br/>Project Title</u>  | <u>Project No</u> | <u>Description</u>  | <u>Status<br/>Period</u> | <u>US\$ in<br/>Project Costs (000)</u> |                 | <u>Project<br/>Officer</u> | <u>Cooperating<br/>Government<br/>Agency</u>   |
|---|-------------------|---|--------------------------|--|-----------------|----------------------------|--|
|   |                   |   |                          | <u>Total</u>                           | <u>Forestry</u> |                            |  |
| 3. Agriculture Resource Inventory       | 267-0134          | Creation of a remote sensing center for natural resource inventory and planning. Includes training component.   | Ongoing<br>80-84         | 2,400                                  | 2,400           | Carl Butte                 | Min. of Forestry<br>Dept of Soil<br>Conservation and<br>Waterland<br>Management                  |
| 4. Agricultural Research and Production | 267-0149          | Farming System research and extension project focused on hill areas with sisalbio agroforestry research component especially for a multipurpose tree component.   | FP design<br>85          | (9,000)                                | (3,000)         |                            | Min of a Dept of<br>Dept. of Agric.<br>Dept. of Livestock &<br>Animal Health<br>Min. of Forestry |
| <b>PAKISTAN</b>                         |                   |   |                          |  |                 |                            |  |
| Forestry Planning and Development       | 191-0401          | This Project will assist the Pakistan government in all areas of forestry planning and forest resource development. Activities will include market analyses for forest products, both "commercial" and "non-commercial"; and, programs for improved species seedling nursery production and plantation establishment. A research component with the Pakistan Forest Institute and the Punjab Province will also be carried out. | Ongoing<br>83 - 91       | 30,000                                 | 30,000          | Al Bashir                  | Ministry of<br>Forestry  |

Aid Asia Projects with Forestry Focus or Forestry Components

| <u>Country &amp;<br/>Project Title</u>    | <u>Project No.</u> | <u>Description</u>  | <u>Status<br/>Period</u> | <u>US\$ in</u>              |                 | <u>Project<br/>Officer</u>                | <u>Cooperating<br/>Government<br/>Agency</u>               |
|---|--------------------|---|--------------------------|-----------------------------|-----------------|---|--|
|   |                    |   |                          | <u>Project Costs (1989)</u> | <u>Forestry</u> |   |  |
| <b>PHILIPPINES</b>                        |                    |   |                          |                             |                 |   |  |
| 1. SICM Integrated Area Development III   | 493-0209           | Improvement of irrigation and drainage systems and farming organization and practices; improved farming methods, and better management of public forest land. Forestry component: Community-based agroforestry and reforestation of portions of degraded land in watershed.       | Ongoing<br>79-85         | 5,000                       | 310             | Jim Benson                                | Sisal River Basin Dev. Program Off., Bureau of Forest Dev. |
| 2. Rainfed Resource Management            | 493-0366           | Develop community-based management of land and water resources in settled upland forest, rainfed agricultural areas, and coastal zones. Forestry component: Research development and application of agroforestry techniques.  | Ongoing<br>82-89         | 20,000                      | 1,000           | Doug Clark                                | Dir. of Natural Resources, Bureau of Forest Development    |
| 3. Rural Energy Development               | 493-0375           | Assist in economically and environmentally sound production and use of biomass energy resources and technologies: wood-fired power plants, gasifiers charcoal kilns, tree plantations, 19,300 ha.   | Ongoing<br>82-89         | 25,000                      | 25,000          | L. Brice<br>FWD                           | Rural Electrification Agency                               |
| <b>SIAM</b>                               |                    |   |                          |                             |                 |   |  |
| 1. Reforestation and Watershed Management | 383-0055           | Institutional development for reforestation and watershed management. Also research and training. Tree planting on 59,000 acres.  | Ongoing<br>80-87         | 10,450                      | 10,450          | Jim Benson<br>(until 2/85)<br>C. Scharber | Dir. of Lands & Land Dev., Forestry Dep.                   |
| 2. Mahaveli Environmental                 | 383-0073           | This project is one element in the large, multi-billion dollar Mahaveli Development Scheme. The forestry component involves the preservation and enrichment of valuable natural forest habitat through the establishment and enlargement of national parks and wildlife reserves. | 9/80/87                  | 5,000                       | 5,000           |   |  |



11

**Mission Special Interests in Forestry**

| <u>Area and Mission</u>  | <u>Special Interest</u>  | <u>Int'l Mailing Address</u>   | <u>Phone</u> |
|--|--|--|--------------|
| <b><u>South Asia</u></b>   |  |  |              |
| 1. USAID/Pakistan, Islamabad<br>Al Hankins<br>Al Markel  | Farm Forestry<br>Training  | 18-6th Avenue, Room 5<br>Islamabad, Pakistan                             | 820471       |
| 2. USAID/India, New Delhi<br>Dave Neessen, ARD<br>Hal Fisher, ARD<br>Charles Hatch, ARD                | Social Forestry<br>Social Forestry<br>Research Training<br>Social Forestry | American Embassy<br>Chanakyaपुरी<br>New Delhi-110021<br>India            | 690351       |
| 3. USAID/Nepal, Kathmandu<br>George Taylor, ARD<br>Carl Butto, ARD (RAD)<br>Burt Levenson, Wood Energy | Watershed<br>Social Forestry   | Rabi Bhawan<br>c/o American Embassy<br>Pani Phokari<br>Kathmandu, Nepal. | 11144/11171  |
| Contractors: SECID<br>Team Leader:   |  | RCUP, P.O. Box 861<br>Kathmandu, Nepal                                   | 21465, 21485 |
| 4. USAID/Bangladesh, Dhaka<br>Joanne Hale, FA<br>Graham Thompson, PDE                                  | Farm Forestry<br>Fuelwood<br>Research                                      | P.O. Box 323<br>Rama,<br>Dacca 2, Bangladesh                             | 235080-9     |
| 5. USAID/Sri Lanka, Colombo<br>Mike Korin, ARD<br>Jim Bonner, ARD                                      | Watershed<br>Training, research<br>Plantations                             | American Embassy<br>P.O. Box 106<br>Colombo, Sri Lanka                   | 21474        |
| Contractors: SECID<br>Team Leader: J. Pickett  |  | c/o USAID  |              |

| <u>Area and Mission</u>  | <u>Special Interest</u>   | <u>Int'l Mailing Address</u>  | <u>Phone</u> |
|--|---|---|--------------|
| <b><u>Southeast Asia and Pacific</u></b>   |   |   |              |
| 1. USAID/Burma, Rangoon<br>Charles C. Sinkins, AD  | Forestry, general   | c/o American Embassy<br>Rangoon, Burma  | 82055        |
| 2. USAID/Thailand, Bangkok<br>John Neave<br>Chuck Anton<br>Dave Balgado  | Fuelwood<br>Watershed<br>Fuelwood<br>Forestry/Natural<br>Resources                                | 2948 Soi Somprasong 3<br>Off Phatchaburi Road<br>Bangkok 4, Thailand            | 252819-9     |
| 3. USAID/Indonesia, Jakarta<br>Retno, AGR<br>Enrique Barrau, AGR<br>Alan Mardus, AGR<br>Frank Gillespie, RD/AW<br>Rick Cobb, ARD | General, N-fixing trees<br>Farm forestry, watershed<br>Research<br>Watershed<br>Forestry, general | American Embassy<br>Jl. Merdeka Selatan 3<br>Jakarta, Indonesia                 | 360-360      |
| Contractors: RMI<br>Team Leader: David Catmur  | Farm forestry<br>Watershed  | RMI-Citanduy<br>P3RPDAS<br>P.O. Box 5, Cianjur<br>Jawa Barat                    | 336          |
| 4. USAID/Philippines, Manila<br>Doug Clark, RA/AO<br>Jerry Risson<br>Paul Novick, RAD/RD<br>Eddie Guiang<br>Jim Dawson           | Forestry Research<br>Forestry, general<br>Forestry<br>Farm Forestry<br>Watershed                  | USAID, 1680 RMC Building<br>American Embassy<br>Roxas Boulevard<br>Metro Manila | 598011       |
| 5. USAID/ASEAN Liaison Office<br>c/o USAID/Philippines<br>Bruce Blackman   | Watershed   | USAID<br>1680 RMC Building<br>Roxas Boulevard<br>Metro Manila                   | 598011       |
| 6. USAID/Fiji, Suva<br>R. Nishihara  |   | American Embassy<br>P.O. Box 218<br>Suva, Fiji                                  | 311399       |

**Address List of Useful Contacts in Forestry in  
Selected Asian Countries**

| <u>Name and Position</u>   | <u>Mailing Address</u>   | <u>Tel No.</u>                    |
|--|--|-----------------------------------|
| <b><u>BANGLADESH:</u></b>  |  |                                   |
| Ashraful Islam<br>Principal Scientific Officer<br>Regional Agricultural Research Station<br>Iskhurdi, Palna<br>Bangladesh                      |  |                                   |
| Dr. Neil Byron<br>Project Coordinator<br>Forestry Sector Planning Project<br>(UNDP/FAO BGD/76/010)<br>Room 14, Block 17,<br>Shere-Bangla Nagar | UNDP Office<br>P.O. Box 224,<br>Rama, Dacca  | 315011<br>ex. 122<br><br>304315   |
| Someswar Das<br>Chief Research Officer<br>Forest Management Division<br>Forest Research Institute  | FRI<br>P.O. Box 273<br>Chittagong<br>Bangladesh                                    | 212084                            |
| W.J. Bill Walsh<br>Project Coordinator<br>Assistance to the Forestry Sector<br>(UNDP/FAO:BGD/79/OIT)   | c/o UNDP<br>P.O. Box 224<br>Rama, Dacca  |                                   |
| <b><u>INDIA:</u></b>   |  |                                   |
| Dr. Anulya K.M. Reddy.<br>ASTRA<br>Indian Institute of Science   | IIS<br>Bangalore 560012<br>India   |                                   |
| C.L. Bhatia<br>Chief Conservator of Forests (Planning)   | IPS<br>17, Rana Pratap Marg,<br>Lucknow  | Res. 46970<br>off. 45095<br>66450 |
| S.A. Shah<br>Indian Forest Service<br>Secretary, ITCI-INDIA  | 1, Jessal Apartment<br>Abhishek Colony,<br>Race Course,<br>Baroda, 390007<br>India |                                   |
| Kamla Chowdhry (Ms)<br>Program Advisor<br>Ford Foundation  | 55 Lodi Estate<br>New Delhi 110003, India  | 619-441                           |

|  |  |                                  |
|--|--|----------------------------------|
| <b>Leonard Ljungman</b><br>World Bank<br>55 Lodi Estate<br>New Delhi 5<br>India  |  | <b>617-241, 1</b>                |
| <b>Ole Lundberg</b><br>Forestry Advisor<br>SIDA  | <b>c/o Swedish Embassy</b><br>India  |                                  |
| <b>P.G. Ramachandran</b><br>Consultant   | <b>C-210 Defense Colony</b><br>New Delhi 110024  | <b>69-3622</b><br><b>62-3186</b> |
| <b>Society for Promotion of</b><br><b>Wastalands Development</b><br>New Delhi 11003<br>India                                       |  | <b>618-856</b><br><b>617-562</b> |
| <b>K.G. Tejwani</b><br>Director<br>Land Use Consultants  | <b>25/31, Old Rajinder Nagar</b><br>New Delhi-110060<br>India                            |                                  |
| <b><u>INDONESIA:</u></b>   |  |                                  |
| <b>Prof. Satari</b><br>Chief Biological Sciences Division  | <b>Gedung BPPT, Lantai 13</b><br>Jl. Haji M.T. Thamrin No. 8<br>Jakarta Pusat, Indonesia | <b>320674</b>                    |
| <b>Dr. Ir. Achmad Sumitro</b><br>Fakultas Kehutanan<br>Universitas Gadjah Mada   | <b>Jl. Bulaksumur</b><br>Yogyakarta, Indonesia   | <b>88688</b>                     |
| <b>Dr. Ir. Setyono Sastrosumarto</b><br>Director General<br>Agency for Forestry Research and<br>Development Department of Forestry | <b>Gedung Manggala Whana Bakti</b><br>Jl. Gatot Soebroto<br>Jakarta, Indonesia           | <b>583035-36</b>                 |
| <b>Dr. Herman Mearuman</b><br>Assistant Minister I<br>Ministry of Population & Environment   | <b>KLE</b><br>Jl. Merdeka Barat 15<br>Jakarta, Indonesia                                 | <b>374307</b>                    |
| <b>Dr. Ishenat Soerianegara</b><br>Director<br>FIOTROP   | <b>Jl. Raya Tajur</b><br>P.O. Box 17<br>Bogor  | <b>(0251)</b><br><b>848-50</b>   |
| <b>Ir. Soejadi</b><br>Badan Penelitian Tanah   | <b>Jl. Ir. W. Djuanda No. 98</b><br>Bogor  | <b>(0251)</b>                    |
| <b>Ir. Hartono</b><br>President Director<br>Gedung Pusat Kehutanan<br>"Manggala Whana Bakti"                                       | <b>Jl. Jend Gatot Soebroto</b><br>Blok VI/4<br>Jakarta Pusat                             | <b>583 048</b><br><b>X. 4223</b> |

**NEPAL:**

Don Gilmour, Manager  
Nepal Australia Forestry Project  
Australian Development Assistance Office  
1/266 Babar Mahal Road  
Thapathali, Kathmandu  
P.O. Box 208  
Kathmandu, Nepal  
13266

Dr. John Cool  
A/D/C  
c/o AFROSC  
Panchayat Plaza  
Kathmandu

Durgesh Man Singh  
Senior Economist  
Agricultural Projects  
Services Centre  
GPO Box-1440  
Kathmandu  
Nepal  
15971  
14713

Dr. Rolf Sualzer  
CET-Coordinator, TWP  
SATA/GTZ  
SATA-TWP  
P.O. Box 113  
Kathmandu  
Nepal  
522550  
521205

Peter Howland  
ODA  
c/o British Embassy  
Lazimpat, Kathmandu

Kumar P. Upadhaya  
Chief Soil Conservation Officer  
Department of Soil  
Conservation and Watershed  
Manager  
Babarmahal, Kathmandu  
15928

Ratna Shumshere J.B. Pans  
Member  
National Planning Commission  
Ranshah Path  
Kathmandu  
Nepal  
15287  
14846

SECID  
Resource Conservation and Utilization  
Project (RCUP)  
P.O. Box 861  
Kathmandu, Nepal  
21465  
21485

**PHILIPPINES:**

Lisbet Bostrand  
Consultant in Ergonomics  
College of Forestry, UPLB  
Centre for Forestry Education  
Development  
P.O. Box 434  
College, Laguna 3720  
Philippines  
2268, X.334

Celso P. Diaz  
Socio-Economic Research Div.  
Forest Research Institute (FORI)  
University of The Philippines,  
Los Banos  
College, Laguna  
Philippines 3720  
2229  
Local 213

12

|   |   |                  |
|---|---|------------------|
| Dr. San Fujisaka (A/D/C)<br>FESAM<br>c/o Institute of Human Ecology (NUMEIN)<br>University of the Philippines<br>at Los Baños | College, Laguna,<br>3720 Philippines                              |                  |
| Bernardo B. Jasmin<br>Chief, Watershed & Range Management<br>Research Division<br>Forest Research Institute                   | UPLB<br>College, Laguna 3720<br>Philippines                       | 2299,<br>3320,   |
| Dr. Calso B. Lantican<br>Dean<br>College of Forestry<br>University of the Philippines<br>at Los Baños                         | UPLB<br>College, Laguna 3720                                      | 2259             |
| Dr. Hans Maliczek<br>FAO Representative a.i.<br>WEDA Sa Makati Building<br>106 Amorsolo Street<br>Manila                      | FAO<br>P.O. Box 7295 (ADC)<br>Manila                              | 88-22-76         |
| Pedro M. Picornell<br>Executive Vice-President-Planning<br>Paper Industries Corporation of<br>the Philippines                 | PICOP<br>A. Soriano Building<br>Makati, Rizal,<br>Philippines     | 88-10-11         |
| Harold Wilson<br>Director<br>Mindanao Baptist Rural Life Center   | Kimuskusan, Bansalan,<br>Davao del Sur<br>P.O. Box 94, Davao City |                  |
| Bruce E. White<br>Project Director<br>The Philippine National Conservation<br>Strategy  | 7248 Malugay Street<br>Makati, Metro Manila<br>Philippines        | 858368<br>887173 |
| Dr. Saturnina Malos<br>Forest Research Institute  | College, Laguna<br>Philippine 3720                                | 2229<br>loc. 209 |
| Dr. Lucrecio L. Rebugio<br>Director<br>FAO-UPLB-CFED<br>College of Forestry, UPLB   | P.O. Box 434<br>College, Laguna 3720<br>Philippines               | 2268, 3340       |

**THAILAND:**

|  |   |                      |
|--|---|----------------------|
| <b>Dr. John L. Woods</b><br>Director<br>Development Training Cooperation<br>and Development (DTCP)<br>19 Phra Atit Road<br>Bangkok 2, Thailand | <b>UNDP/DTCP</b><br>P.O. Box 2-147<br>Bangkok               | <b>281-</b>          |
| <b>Jim French</b><br>Planner/Programmer<br>UNDP/DTCP<br>19 Phra Atit Road<br>Bangkok 2, Thailand   | <b>ditto</b>  | <b>281-<br/>281-</b> |
| <b>Dr. Romeo H. Gecolas</b><br>Senior Planner/Programmer<br>UNDP/DTCP<br>19 Phra Atit Road<br>Bangkok, Thailand                                | <b>ditto</b>  |                      |
| <b>Bob Ralston</b><br>Advisor to the Secretary<br>Ministry of Agriculture  | <b>Ministry of Agriculture</b><br>Rajdamern Road<br>Bangkok | <b>281-</b>          |
| <b>Dr. Y.S. Rao</b><br>Forestry Economist<br>FAO Regional Office for Asia<br>and the Pacific   | <b>Maliwan Mansion</b><br>Phra Atit Road<br>Bangkok 10200   | <b>281-</b>          |
| <b>Marcus Sherman</b><br>VITA Asia Field Office<br>48, Soi Aree 1<br>Bangkok   | <b>Phaholyothin Road</b><br>Bangkok 4<br>Thailand           |                      |
| <b>Dr. Jacques Valls</b><br>Director<br>Renewable Energy Resources<br>Information Center<br>Asian Institute of Technology                      | <b>P.O. Box 2754</b><br>Bangkok, Thailand                   | <b>316-<br/>Ex.</b>  |

**Donovan:mr (1/85) AID/Jakarta**  
**DOC.5261A**

**FOREIGN DEVELOPMENT ASSISTANCE AGENCIES FORESTRY ADVISERS**

**International/Regional Headquarters :**

**I. MULTILATERAL**

**1. Asian Development Bank (ADB)**

Dr. Berin N. Ganguli  
Forestry Specialist  
Asian Development Bank  
P.O. Box 789  
Manila, Philippines

**2. Economic and Social Commission for Asia and the Pacific (ESCAP) Natural Resource Division**

C.D. Wang  
Director  
Natural Resources Division  
ESCAP  
Rajadamnoen Ave  
Bangkok 2, Thailand

**3. Food and Agriculture Organization (FAO)**

Mr. C. Chandrasekharan  
Senior Forestry Planning Officer  
Forestry Department, Room F-920  
FAO  
Via delle Terme di Caracalla  
00100 Rome, Italy

Dr. Y.S. Rao  
Regional Forestry Economist  
FAO Regional Office  
Phra Arjit Road  
Bangkok 10200, Thailand

Dr. K.D. Menon  
Asia Pacific Forest Industries  
Development Group  
c/o UNDP  
P.O. Box 2544  
Kuala Lumpur, Malaysia

**4. World Bank (IBRD)**

Mr. John Spears  
Senior Forestry Adviser (AGR)

Mr. T. Ishikawa  
Forestry Specialist (AED)  
World Bank  
1818 H Street, N.W.  
Washington, D.C. 20433 U.S.A

International/Regional Headquarters :

II. BILATERAL AGENCIES

1. AUSTRALIA

Australia Development Assistance Board (ADAB)

Mr. Robert Dunne  
Director  
ADAB  
Banks Street  
Yerralumata  
Canberra, Australia

Dr. Lindsay D. Pryor  
Senior Project Advisor  
Centre for International Agricultural  
Research (ACIAR)  
G.P.O Box 1571  
Canberra, Australia 2601

2. BELGIUM

Belgian Administration for the Development Cooperation (BADC)

Mrs. Ribeiro  
BADC  
P.O. Box 57  
1050 Brussels, Belgium

3. CANADA

Canadian International Development Agency (CIDA)

Mr. Ralph Roberts  
Chief, Forestry Sector  
Natural Resources Division

Mr. A. Letourneau  
Forest Specialist, Asia Region  
Natural Resources Division

CIDA  
Place du Centre  
Promenade du Portage  
Hull, Quebec K1A 0G4  
Canada

22

**International/Regional Headquarters :**

**International Development Research Centre (IDRC)**

G. Lessard  
Associate Director for Forestry  
IDRC  
P.O. Box 8500  
Ottawa, Ontario, K1G 3H9  
Canada

Dr. C. Sastry  
Program Officer, Forestry (Asia)

Mr. Paul Stinson  
Regional Program Officer

International Development Research Centre  
Southeast Asia Regional Office  
Tanglin P.O. Box 101  
Singapore 9124

4. **FINLAND**

**Finnish International Development Agency (FINNIDA)**

FINNIDA  
Tehtaankatu 1A  
SF-00140 Helsinki 14  
Finland

5. **GERMANY (FDR)**

**German Agency for Technical Cooperation (GTZ)**

Dr. Friedrichsen  
GTZ Headquarters  
Section L3: Plant Production, Plant  
Production and Forestry  
P.O. Box 5180  
6236 Eschborn 1  
Germany

**International/Regional Headquarters :**

**6. JAPAN**

**Japanese International Cooperation Agency (JICA)**

Mr. Katsura Watanabe  
Director  
Forestry & Fisheries Coop.  
JICA  
P.O. Box 216  
Shinguku Mitsui Bldg, 45th Floor  
# 1-2-Chome, Nishi-Shinguku Singuku-Ku,  
Tokyo 160, Japan

**7. NETHERLANDS**

Mr. M. Damme  
Director  
Division for Development Cooperation in Asia  
DGIS/DAL  
Mr. Arjan Hamburger  
Dept. of Special Program

Mr. Egbert Pelinck  
Forestry Advisor

Agency for International Cooperation  
Ministry of Foreign Affairs  
P.O. Box 20061  
2500 EB The Hague, Netherlands

**8. NORWAY**

**Norwegian Agency for Development (NORAD)**

Mr. S. Utmi  
NORAD  
Head of Agriculture and Rural Development  
P.O. Box 8142  
Dep. Oslo 1  
Norway

**9. NEW ZEALAND**

Mr. A. Kirkland  
Director General  
New Zealand Forest Service  
Private Bank  
Wellington  
New Zealand

**International/Regional Headquarters :**

**10. SWEDEN**

**Swedish International Development Agency (SIDA)**

Mr. J.O. Lundberg  
SAREC (research)  
Birrer Jarligatan 61  
S105 25 Stockholm  
Sweden

**11. UNITED KINGDOM**

**Overseas Development Administration (ODA)**

Mr. Ronald H. Kemp  
ODA  
Eland House  
Stag Place  
LONDON S 1E 5 DH, UK

Mr. A.J. Tainsh  
Agricultural Adviser  
ODA  
Southeast East Asia Development Division  
British Embassy  
Ploenchit Rd  
Bangkok, Thailand

DOC:4819A

Donovan:mr (1/S5) AID/Jakarta

List of UNDP-assisted Forestry Projects in Selected Countries of  
the Asia & Pacific Region

| <u>Country</u>                                       | <u>Symbol</u> | <u>Title of Project</u>   | <u>Amount of UNDP<br/>Contribution<br/>US\$</u> |
|--|---------------|---|---|
| <b>A. Operational Projects as of 1 December 1983</b> |               |   |   |
| Bangladesh   | BGD/78/010    | Supply and Demand of Forest Products and Future Development Studies       | 692,379   |
| "  | BGD/79/017    | Assistance to the Forestry Sector   | 2,611,830                                       |
| "  | BGD/81/020    | Strengthening of the Forest Development and Training Centre, Kaptai       | 1,272,016                                       |
| "  | BGD/81/028    | ADB Community Forestry  | 1,792,974                                       |
| Burma  | BUR/79/011    | National Forest Survey and Inventory                                      | 4,247,506                                       |
| "  | BUR/80/006    | Nature Conservation and National Parks                                    | 1,484,290                                       |
| "  | BUR/81/001    | Technical and Vocational Forestry and Forest Industries Training          | 460,800   |
| "  | BUR/81/009    | Strengthening of Forest Research Institute, Yezin                         | 1,398,000                                       |
| India  | IND/82/018    | Training in Game Farming  | 36,000  |
| "  | IND/81/040    | Fungus Investigation in Eucalyptus Plantations                            | 192,200   |
| "  | IND/82/003    | Establishment of the Wildlife Institute of India                          | 1,010,050                                       |
| "  | IND/83/006    | Pulp and Paper Development in Andhra Pradesh                              | 433,000   |
| Nepal  | NEP/74/020    | Integrated Watershed Management, Torrent Control and Land Use Development | 1,607,386                                       |
| "  | NEP/80/029    | Watershed Management and Conservation Education                           | 2,098,631                                       |
| "  | NEP/80/030    | Community Forestry Development  | 1,967,693                                       |

UNDP Projects Continued ..... page 2

| <u>Country</u>                  | <u>Symbol</u> | <u>Title of Project</u>   | <u>Amount of UNDP<br/>Contribution<br/>US\$</u> |
|---------------------------------|---------------|---|---|
| Pakistan                        | PAK/80/002    | Forestry Pre-investment<br>Hazara                                       | 173,093   |
| "                               | PAK/78/036    | Watershed Management Research<br>at PFI, Peshawar                       | 1,739,380                                       |
| "                               | PAK/78/038    | Forestry Pre-Investment<br>Centre, NWFP                                 | 937,350   |
| "                               | PAK/78/039    | Protection of Forest from<br>Fire in Asad Kashmir                       | 97,621  |
| "                               | PAK/78/043    | Pulp and Paper Laboratory at<br>Pakistan Forestry Institute<br>Peshawar | 321,720   |
| Sri Lanka                       | SRL/79/014    | Forest Inventory for<br>Management Planning                             | 502,687   |
| "                               | SRL/79/016    | Sawmilling Training and<br>Development                                  | 323,108   |
| Thailand                        | THA/81/004    | Development of Diversified<br>Forest Rehabilitation; NE<br>Thailand     | 1,048,740                                       |
| Regional                        | RAS/78/010    | Asia - Pacific Forest<br>Industries Development Group                   | 1,852,126                                       |
|                                 | RAS/79/099    | Training in Forest Inventory<br>for Asia and the Pacific                | 229,409   |
|                                 | RAS/81/053    | Watershed Management (includ-<br>ing flood and drought-prone<br>areas)  | 84,820  |
|                                 | RAS/81/110    | Regional Coconut Wood Training<br>Programme                             | 603,530   |
|                                 | RAS/80/001    | Regional Energy Development<br>Programme (ESCAP/FAO)                    | 124,300   |
|                                 |               |   | <hr/>   |
| AID Host Country (23) Subtotal: |               |   | 26,448,454                                      |
| Regional Projects (5) Subtotal: |               |   | 2,894,185                                       |
| All Asia (46) Total:            |               |   | 47,626,784                                      |

**B. Projects Under Consideration**

|            |             |   |                   |
|------------|-------------|---|-------------------|
| Bangladesh | BGD/.../... | Development of Wood Preservation  | 764,000           |
| Burma      | BUR/81/003  | Integrated Watershed Management   |                   |
| "          | BUR/80/002  | Dryland Improvement Assistance to the Institute of Agriculture, Veterinary Science and Agriculture (Forestry Faculty) | 1,398,000         |
| India      | IND/81/020  | Modern Forest Fire Control  | 2,000,000         |
| "          | IND/.../... | Strengthening the Central Pulp and Paper Research Institute, Saharanpur   | 4,155,300         |
| Indonesia  | INS/83/008  | Forest Industries Complex Development, East Kalimantan  | 4,807,000         |
| "          | INS/83/019  | Forestry Sector Planning and Development  | 491,800           |
| Nepal      | NEP/81/001  | Propagation of Endangered Species in Captivity  | 752,000           |
| "          | NEP/81/010  | Shivapuri Watershed Management and Fuelwood Plantation  | 323,900           |
| "          | NEP/79/019  | National Parks (Phase II)   | 870,050           |
| Sri Lanka  | SRL/79/014  | Forest Inventory for Management Planning (Phase II)   | 895,540           |
| Thailand   | THA/.../..  | Rural Development through Watershed Management in the Nam Phong Basin   | 300,000           |
| Regional   | RAS/78/010  | Asia in Pacific Forest Industries Development Group (Phase II)  | 1,198,130         |
| "          | RAS/79/099  | Training in Forest Inventory for Asia and the Pacific   | 575,000           |
| "          | RAS/81/052  | Forestry and Reforestation Management   | 317,979           |
|            | RAS/81/053  | Watershed Management  | 450,000           |
|            |             |   | 540,000           |
|            |             | <b>AID Host Country (12) Subtotal:</b>  | <b>17,955,720</b> |
|            |             | <b>Regional Projects (4) Subtotal:</b>  | <b>1,882,979</b>  |
|            |             | <b>All Asia (25) Total:</b>   | <b>26,294,220</b> |

List of FAO/Government Cooperative Programs  
(Trust Fund) Projects

| <u>Country</u>  | <u>Symbol</u>             | <u>Title of Project</u>   | <u>Amount of UNDP<br/>Contribution<br/>US\$</u> |
|---|---------------------------|---|---|
| <b>A. <u>Operational Projects as of 1 December 1983</u></b> |                           |   |   |
| India   | GCP/INT/363/SWE           | Evaluation of the Gujarat Social Forestry Programme   | 162,280   |
| Pakistan  | GCP/INT/363/SWE           | Fuelwood for Rural Communities  | 23,165  |
| Philippines   | GCP/INT/363/SWE           | Agroforestry Practices in the Philippines: Documentary Film   | 53,336  |
| Thailand  | GCP/INT/363/SWE           | Curriculum Development in Social Forestry at Kasetsart University   | 99,500  |
| Regional  | G-1976 (Japan)            | Special Study on Forest Management, Afforestation and Utilization of Forest Resources in the Developing Regions | 270,000   |
|   | GCP/RAS/066/SWE           | Centre for Forestry Education Development for the Asia and Southwest Pacific Region                             | 1,778,810                                       |
| AID Host Country (4) Subtotal:                              |                           |   | 338,281   |
| Regional Projects (2) Subtotal:                             |                           |   | 2,048,810                                       |
| All Asia (8) Total:   |                           |   | 2,988,273                                       |
| <b>B. <u>Projects Under Consideration</u></b>               |                           |   |   |
| Bangladesh  | G-2190 (Japan)            | Lizard Conservation and Propagation, Bangladesh   | 25,000  |
| Burma   | GCP/BUR/././ITA           | Assistance to National Fuelwood Programme   | undetermined                                    |
| Nepal   | (Norway)                  | Shivapuri Watershed Management & Fuelwood Plantation Project (First Phase)                                      | 766,366   |
| "   | (Netherlands/<br>Finland) | Watershed Management and Fuelwood/Fodder Production in Phewa-Tal Sub-Watershed                                  | 2,339,100                                       |

FAO Trust Fund Projects Continued..... page 2

| <u>Country</u>   | <u>Symbol</u> | <u>Title of Project</u>   | <u>Amount of UNDP<br/>Contribution<br/>US\$</u> |
|--|---------------|---|---|
| <b>B. Projects Under Consideration Continued .....</b> |               |   |   |
| Nepal  | (Finland)     | Fuelwood/Fodder Production<br>and Watershed Management in<br>Kulekhani Sub-Watershed  | 5,528,285                                       |
| "  | (World Bank)  | Terai Forestry Project, Nepal   | 1,963,532                                       |
| Pakistan   | (World Bank)  | Forestry Support for Income<br>Generating Project for Refugee<br>Areas                | 125,000   |
| Philippines  | (Australia)   | Agro-Forestry and Land-Use<br>Evaluation  | 437,027   |
| Regional   | (Australia)   | Centre for Forestry Education<br>Development for Asia and<br>Southwest Pacific Region | 1,654,000                                       |
| "  | (Netherlands) | Regional Wood Energy Develop-<br>ment Programme                                       | 1,700,000                                       |
| "  | (Finland)     | Asia-Pacific Forest Industries<br>Development Group                                   | 2,130,429                                       |
| AID Host Country (11) Subtotal:                        |               |   | 11,184,310                                      |
| Regional Projects (3) Subtotal:                        |               |   | 5,484,429                                       |
| All Asia (13) Total:                                   |               |   | <u>22,551,739</u>                               |

| <u>Country</u>  | <u>Symbol</u>    | <u>Title of Project</u>                             | <u>Amount of UNDP<br/>Contribution<br/>US\$</u> |
|---|------------------|---|---|
| <b>A. <u>Operational Projects as of 1 December 1983</u></b> |                  |   |   |
| Bangladesh  | TCP/BGD/2309(MF) | Sunderbans Forestry Development Planning Mission    | 138,000   |
| Fiji  | TCP/FIJ/2303(E)  | Emergency Assistance to the Pine Commission         | 125,000   |
| Pakistan  | TCP/PAK/2311(Ma) | Assistance to Local Council Tree Planting           | 25,000  |
| Philippines   | TCP/PHI/2307(Ma) | Multiple-Use Forest Management                      | 52,500  |
| Sri Lanka   | TCP/SRL/2304(T)  | Training in Log Grading                             | 100,000   |
| Thailand  | TCP/THA/2306(T)  | Application of Satellite Remote Sensing to Forestry | 55,000  |
| AID Host Country Projects (6) Subtotal:                     |                  |   | 495,500   |
| All Asia Projects (8) Total:                                |                  |   | 679,500   |
| <b>B. <u>Projects Under Consideration</u></b>               |                  |   |   |
| Nepal   |                  | Emergency Support to Tree Seed Unit                 | 145,000   |
| Sri Lanka   |                  | Coconut Wood Training Programme                     | 42,000  |
| Thailand  |                  | Coconut Wood Training Programme                     | 42,000  |
| Regional  |                  | Regional Coconut Wood Training Programme            | 198,000   |
| AID Host Country Projects (3) Subtotal:                     |                  |   | 229,000   |
| Regional Project (1) Subtotal:                              |                  |   | 198,000   |
| All Asia Projects (6) Total:                                |                  |   | 559,000   |

**List of World Food Programme Projects Involving  
Forestry Activities as of  
1 December 1983**

| <u>Country</u>                                  | <u>Code</u>     | <u>Title of Project</u>  | <u>WFP Contribution for<br/>Forestry component<br/>US\$</u> |
|---|-----------------|--|---|
| India   | 259<br>(Exp II) | Food assistance to Rajasthan<br>Canal Workers                                    | 12,010,000  |
| -   | 572<br>(Exp II) | Social and Economic Development<br>in Maharashtra through forestry<br>activities | 17,890,000  |
| -   | 2600            | Food Assistance for new settler<br>the Rajasthan Canal Project area              | 13,108,000  |
| -   | 2664            | Rural Development in Mahendergarh<br>Haryana                                     | 1,050,000   |
| -   | 2683            | Socio-Economic Development through<br>forestry activities in Bihar               | 21,888,900  |
| -   | 2684            | Socio-Economic Development through<br>forestry activities in Madhya-Pradesh      | 37,045,900  |
| -   | 2685            | Socio-Economic Development through<br>forestry activities in Orissa              | 27,134,900  |
| Indonesia                                       | 2343            | Social and Economic Development in<br>Java through forestry activities           | 6,108,000   |
| Pakistan  | 2199<br>(Exp)   | Range and Watershed management and<br>afforestation in Punjab                    | 3,938,000   |
| -   | 2435            | Watershed Management in Dir and Swat<br>(Northwest Frontier Province)            | 3,254,900   |
| -   | 2149            | Integrated Land Management in the<br>Kashmir Territory                           | 2,890,000   |
| -   | 2451            | Assistance to Tarbela and Mangla<br>Watersheds                                   | 18,558,800  |
| <b>AID Most Country Projects (12) Subtotal:</b> |                 |  | <b>166,877,400</b>  |
| <b>All Asia Projects (21) Total:</b>            |                 |  | <b>201,416,630</b>  |

**Source:**

Derived from Annexes I-IV in "The Forestry Field Programme in The Region"; (FO:APFC/84/9) Asia-Pacific Forestry Commission, Twelfth Session, Bangkok, Thailand, 19-23 March 1984.

ANALYSIS OF WORLD BANK FORESTRY LENDING IN SELECTED ASIAN COUNTRIES1974 - 1983

| Year | Forestry Project                                 | Agriculture, Watershed<br>or Rural Development<br>Projects with forestry<br>component | Loan Amount<br>(forestry &<br>components)<br>US\$ million | Total lending<br>for forest<br>development<br>US\$ million |
|------|--|---|---|--|
| 1974 | Burma  |   | 24.0  |  |
|      | Philippines I                                    | Nepal Settlement  | 4.0   |  |
|      |  |   | 2.0   | 30.0   |
| 1975 | none   |   |   |  |
| 1976 | India TA   |   | 3.0   |  |
|      |  | Nepal RD I  | 0.2   | 3.2  |
| 1977 | Philippines II                                   |   | 8.0   |  |
|      |  | Philippines RD II   | 0.5   | 8.5  |
| 1978 | Pakistan TA, Masara                              |   | 1.7   |  |
|      | Philippines II                                   |   | 8.0   |  |
|      |  | Pakistan Hill Farming   | 0.1   |  |
|      |  | Sri Lanka Crop  |   |  |
|      |  | Diversification   | 0.1   | 9.9  |
| 1979 | India, UP  |   | 37.0  |  |
|      |  | Indonesia Ag. Trg. II   | 5.0   | 42.0   |
| 1980 | Burma II   |   | 35.0  |  |
|      | India, Gujarat                                   |   | 37.0  |  |
|      | Nepal  |   | 17.0  |  |
|      | Bangladesh                                       |   | 11.0  |  |
|      |  | Indonesia Irrigation XV   | 0.8   |  |
|      |  | Indonesia Ag. Research II   | 4.3   |  |
|      |  | Thailand Northern Ag.   |   |  |
|      |  | Watershed   | 3.0   | 108.1  |
| 1981 | Philippines Watershed Mgmt<br>and Insect Control |   | 38.0  |  |
|      | Burma Wood Industries I                          |   | 32.0  |  |
|      | India, Kandi Watershed                           |   | 5.0   | 75.0   |
| 1982 | India, West Bengal                               |   | 29.0  | 29.0   |
| 1983 | India, Jammu Kashmir                             |   |   |  |
|      | Maryana Social Forestry                          |   | 13.0  |  |
|      | Sri Lanka, Forest                                |   |   |  |
|      | Resources Development                            |   | 9.0   |  |
|      |  | India Watershed Mgmt.   | 16.0  | 38.0   |
|      | TOTAL  |   |   | 363.7  |

Note: Prior to 1974, the Bank made no investment in forest development in Asia apart from a US\$ 24.2 million loan to develop a pulp and paper mill in Pakistan. Total excludes lending for pulp and paper industry development amounting to US\$ 123 million during this period.

Source: Derived from Annex I, "Review of World Bank financed Forestry Activity, FY 1983" dated June 30, 1983.

## Appendix 3.3.

### AN OUTLINE OF JICA TECHNICAL COOPERATION IN FORESTRY IN ASIA

| Country                                | Title   | Objective   | Duration      | No. of Experts | Total Estimated Costs |
|--|---|---|---------------|----------------|-----------------------|
|  |   |   |               |                | USD million           |
| <b>I. Project Completion</b>           |   |   |               |                |                       |
| <b>A. Ongoing Projects</b>             |   |   |               |                |                       |
| 1. Philippines                         | Pantabangan forestry development                  | - Develop afforestation techniques and establish pilot plantation (8100ha)<br>- Strengthen forest conservation training | 6/76 - 7/87   | 11             | 20.0<br>(4.0)         |
| 2. Indonesia                           | Trial plantation in South Sumatra                 | - Develop afforestation techniques and establish plantation (2100ha) including agroforestry trials                      | 4/79 - 4/86   | 7              | 6.0<br>(0.4)          |
| 3. Thailand                            | Reforestation research and training               | - Strengthen silvi-cultural research and training   | 7/81 - 7/86   | 8              | 13.3<br>(0.8)         |
| 4. Thailand                            | Logging and transport training                    | - Develop efficient and effective logging and transport systems and strengthen training                                 | 10/83 - 9/88  | 8              | 5.3                   |
| 5. China (PR)                          | Integrated wood utilization research              | - Develop and strengthen the research institute in Harbin   | 10/84 - 10/84 | 4              | 4.6                   |
| <b>TOTAL</b>                           |   |   |               | 20             | 59.1<br>(12.4)        |
| <b>B. Projects under consideration</b> |   |   |               |                |                       |
| 1. Indonesia                           | Tropical rain forest research, Samarinda          | - Develop regeneration and management research  | 3 yrs.        | 6              | 10.0<br>(0.8)         |
| 2. Malaysia                            | Wood products research, Kuantan                   | - Develop research in selected subjects   | 4-5 yrs       | 4              | 3.7                   |
| 3. Malaysia                            | Reforestation training centre, Sabah              | Strengthen reforestation training at intermediate level   | 8 yrs.        | 8              | 5.3                   |
| 4. Brunei                              | Forestry research                                 | - Establish forestry research institute   | 3 + 5 yrs.    | 4              | 3.7                   |
| <b>TOTAL</b>                           |   |   |               | 22             | 21.7<br>(6.0)         |
| <b>II Development Survey</b>           |   |   |               |                |                       |
| <b>A. Ongoing Survey</b>               |   |   |               |                |                       |
| 1. Malaysia                            | Afforestation feasibility study, Sarawak          | ---   | 1983 - 84     | -              | 0.4                   |
| <b>B. Planned Surveys</b>              |   |   |               |                |                       |
| 1. Philippines                         | Forest land information analysis in wide area     | - Survey of current land use practices and present guidelines for rational uses   | 1985 - 86     | -              | 1.0                   |
| 2. Thailand                            | National forest management in a conservation area | - Rationalize land use in the national forest areas   | 1985 - 86     | -              | 1.0                   |
| <b>TOTAL</b>                           |   |   |               |                | 2.0                   |

Note: Capital costs indicated in ( ) : USD 1.00 = 100 Yen  
 Source: Personal communications, G. Utanawa, Director, Forestry and Fisheries Japanese International Cooperation Agency, Tokyo

(October, 1984)

CIDA FORESTRY PROJECTS IN ASIA

| <u>Country +<br/>Project Title</u>                                  | <u>Project #</u> | <u>Description</u>   | <u>Status<br/>Period</u> | <u>Project Cost<br/>(\$000)</u> |
|---|------------------|--|--------------------------|---------------------------------|
| ASEAN Forest Tree<br>Seed Centre<br>(Muei Lek Thailand)             | 149/08002        | Development of a tree<br>Seed bank and tree<br>seed centre for ASEAN<br>Region.  | on-going<br>82-85        | 1,800                           |
| ASEAN Forest Tree<br>Seed Centre Phase II                           | -                | Item as above,   | Planting<br>85-90        | -                               |
| ASEAN Institute of<br>Forest Management<br>(Malaysia)               | 149/08304        | Development of a Forest<br>Management Institute to<br>assist ASEAN countries<br>in effectively and<br>efficiently managing<br>their forest resources<br>(focus on natural<br>forest) | On-going<br>85-90        | 7,300                           |
| Burma<br>Wood Preservative<br>Testing                               | 220/00704        | Testing of wood preser-<br>vative for use in glue-<br>laminated wood products.   | Ongoing<br>77-85         | 250                             |
| India<br>Andhra Pradesh<br>Social Forestry                          | 468/08001        | Implementation and<br>monitoring of a social<br>forestry project   | On-going<br>84-88        | 44,000                          |
| Indonesia<br>Forest Industry<br>Vocational School II<br>(Samarinda) | 472/08011        | Vocational Training in<br>- sawdoctoring<br>- millwright<br>- pipe and steam fitting<br>- industrial electronics   | On-going<br>82-87        | 5,000                           |

DCC.6010A  
DD:mr

**Selected Publications from Reference Collection  
of Regional Forestry Advisor, Asia**

**Bangladesh:**

- Prospects of Fast-Growing Trees in Bangladesh  
by: Center for Policy Research, University of Dhaka
- Supply and Demand of Forest Products and Future Development Strategies  
by: James J. Douglas  
Khalilur Rahman

**Thailand:**

- Regional Timber Flows Resulting from Land Use Policies: Thailand  
by: Richard S. Driscoll, Land-use consultant  
Asia Pacific Forest Industries Development Group, Kuala Lumpur

**Sri Lanka:**

- The Mahaweli River Basin of Sri Lanka  
by: Sarath G. Ilangatileke

**Philippine:**

- Training and Research in Multiple-Use Forest Management  
Management Research of Philippine Dipterocarp Forest  
by: J. Wyatt-Smith  
FAO, Manila 1981
- Report on A Study Tour to Communal Tree Farming Programme in the Philippines, 13-31 August, 1980  
by: Jerker Thunberg and Marit Wækner  
Community Forest Dev. Project, Nepal, 1980
- Agroforestry in the Philippines  
by: Mr. Artemio Caleda and Dr. Isidro D. Esteban
- Multiple-Use Forest Management  
by: O.J. Palin  
FAO, Manila 1981
- Watershed Management & Erosion Control Project  
The World Bank, June 10, 1980

- Loan Financing of Smallholder Tree Farming for Fuelwood Production in the Province of Ilocos Norte, Philippines  
by: Eric L. Hyman
- Regional Timber Flows Resulting from Land use Policies, Philippines  
by: Richard S. Driscoll Asia Pacific Forest Industries Development Group  
FAO Kuala Lumpur

#### Pakistan

- Report on A Seed Consultation Visit to Pakistan 19 March - 6 April 1982  
by: S.J. Midgley
- Social Forestry Energy Development  
FAO
- Afforestation and Reforestation Strategies in Pakistan  
by: K. Hameed Ullah and R.W. Khan
- Watershed Management  
FAO
- Land Tenure Systems and Social Implications of Forestry Development Programs  
by: Michael M. Cernes  
World Bank, April, 1981
- The Forests & Forestry Program of West Pakistan  
by: Paul Zehngraff

#### Nepal:

- Afforestation Word List English-Nepali  
by: A. Fearnside, M.Sc.  
Nepal Australia Forestry Project, Kathmandu
- Seed Collection Times for Afforestation Species in Nepal  
by: Malcolm Campbell and Surya Joshi  
Nepal Australia Forestry Project, Kathmandu
- Plant Propagation for Reforestation in Nepal  
by: M.W. Campbell  
Australian National University
- The Role of Forestry in Himalayan Watershed Development  
by: Sir Charles Pereira

- Fuelwood Consumption Rates in A Nepali Village Methodologies and Conclusions  
by: Jeff Fox, 1982  
University of Wisconsin, Madison
- Interrelationships Between Resources, Environment, People and Developments: The Case of the Himalayan Foothills  
by: Michael Thompson and Michael Warburton
- Silvicultural Aspects of Community Forestry Development in the Hills of Nepal 1980-1981  
by: P.K. Tyystjarvi, Nepal  
FAU, Kathmandu

New Delhi:

- Biomass Research Centre  
National Botanical Research Institute, India
- The Roles of Biomass  
by: Virgil J. Flanigan  
University of Missouri
- Social Forestry: an Overview of the Indian Experience  
by: M.K. Dalvi
- Agro-Forestry and it's Potential Contribution to Industry in India  
by: Dr. A.K. Banerjee
- Afforestation in Arid Zones  
by: R.N. Kaul
- Agricultural Land use Vis-A-Vis need for Forestry  
by: R.C. Ghosh, June 1979
- Minor Forest Products of India  
by: D.N. Tewari
- India and The Energy Crunch  
by Marcus F. Pranda
- Management Plan for Social Forestry Programme in Village Karkhali
- Agro-Forestry: The Rural Poor and Institutional Structures  
by: Kamla Chowdry
- Energy from Trees: The Second Green Revolution in India  
by: V.P. Agarwala; D.W. Seckler; K.G. Tejwani

96

- North India's Tree Huggers  
by: Mark Shepard
  
- Social Economic and Ecological Impact of Social Forestry in Kolar  
by: Vandana Shiva and M.C. Sharatchandra  
Indian Institute of Management, India

DOC. 5261A