ITTO and the Rehabilitation of Degraded Forest Lands in the Tropics

E. Ze Meka*

Abstract

ITTO is an Intergovernmental Organization with a mandate to administer the provisions and to supervise the operation of the International Tropical Timber Agreement (ITTA) established in 1983. The objectives of the ITTA are, among others, to promote research and development with a view to improving forest management and wood utilization, and to encourage the development of national policies aimed at sustainable utilization and conservation of tropical forests and their genetic resources. ITTO's action may therefore be seen as both in certain cases prevention-oriented and in others cure-oriented. As regards the rehabilitation of degraded forest lands, ITTO's action is first and foremost aimed at minimizing the degradation of forest lands and hence the need for rehabilitation. The rationale for this approach derives from the various advantages of keeping forest lands under forest cover and from serious difficulties inherent in the successful rehabilitation of degraded forest lands.

The rehabilitation of degraded forest lands accounts for an important component of ITTO's activities due to the fact that on the one hand a great expanse of forest lands have already been degraded and are in need of rehabilitation, and on the other hand, the degradation of forests, which is mainly the result of unsustainable livelihood activities carried out by the poor rural populations, will unlikely come to an end in a very near future due to growing demographic pressures, social and economic conditions of the populations concerned, and persistent gaps in scientific research. Approximately 13.8% of the total budget secured for approved projects in the field of reforestation and forest management is, therefore, allocated to programmes relating to rehabilitation of forest lands, through either specific rehabilitation projects, or integrated forest management projects with a specific component of rehabilitation. A project PD 2/87 (F) entitled "Rehabilitation of Logged-over Forests in Asia/Pacific Region" currently under implementation is one of such projects. The Project's activities so far initiated, concern the development of a classification system for logged-over forests, with relevance to silvicultural activities based on eco-floristic zones, and the assessment of the extent of degraded forest lands in six Asian countries.

Although the project is not yet completed, some considerations to be taken into account in the development and potential application of the classification system have already emerged: the precise definition of the objective of rehabilitation, a careful review of site conditions, the necessity to evolve a flexible and user-friendly classification system and the integration of environment and socio-economic factors, including the assessment of costs of rehabilitation and agro-forestry options.

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* Projects Manager, Reforestation and Forest Management ITTO

Mr. Chairman, Ladies and Gentlemen :

I am most privileged to have the opportunity to address this meeting. First of all, let me extend to you the warm greetings of Dr. Freezailah, Executive Director of the International Tropical Timber Organization (ITTO), and his sincere wishes for the success of our symposium focused on the rehabilitation of degraded lands in the tropics. We trust that the exchange of views and experiences will contribute in some measure to an increased understanding of the tasks involved in the search for effective solutions to improve the living standards of the local population in the areas concerned and the environment quality at the local, regional and global level.

My contribution wil focus on the ITTO's actual and potential contribution to this very important issue. To that end my statement will address the following specific points :

- ITTO and Sustainable Forest Management in the Tropics ;
- The importance of forest land rehabilitation in the ITTO Plan of Action in sustainable Forest Management in the Tropics ;
- Forest land rehabilitation in current ITTO activities ;
- A case study of a forest land rehabilitation project, currently under implementation with the technical and financial support of ITTO.

However before stepping into the core of the subject, I would like to provide some background information on ITTO since some participants in this symposium may not be familiar with this Organization. ITTO is an intergovernmental organization established by the UNO with a mandate to administer the provisions and to supervise the operation of the International Tropical Timber Agreement (ITTA) concluded in November 1983. To date the membership of ITTO is composed of 23 producing countries accounting for over 75% of the tropical forest resources in the world and 27 consumer countries accounting for over 95% of the world imports of tropical timber. Guyana and New Zealand are the newest members. The International Tropical Timber Council (ITTC) is the governing body. The three technical Permanent Committees (Economic Information and Market Intelligence, Reforestation and Forest Management, and Forest Industry) are the technical organs while the Secretariat, headed by the Executive Director of ITTO, is the administrative organ in charge of preparing the meetings of the various organs and implementing their decisions. However, though the ITTC and the Permanent Committees are composed of government representatives of consumer and producer members of ITTO, participation in their meetings is extended to an active group of observers comprising other intergovernmental organizations and NGOs involved in environment and forest conservation, representatives of tropical trade and industry. In this sense, ITTO is a unique forum where consumers and producers, conservation NGOs, timber industrialists and traders can discuss issues related to the development of tropical timber and the resources. The Organization is also unique in this sense that votes are distributed in an equal balance between producer and consumer countries ; however as an added asset, decisions are taken in practice by consensus. The atmosphere of debate is therefore favorable for promoting understanding based on mutual confidence and genuine commitment to action.

Conceived at the beginning as a commodity agreement focused on tropical timber it became increasingly clear at an early stage that on the one hand, the interlinkage of tropical timber trade and tropical forest management and on the other, the significant environmental and social implications derived from the latter would unlikely make this agreement a traditional commodity one. Thus it so happened fortunately that the ITTA was finally concluded as a development-oriented Agreement on tropical timber with a high global potential for development (Hpay, 1985).

ITTO and sustainable forest management in the tropics

The objectives of the above-mentioned agreement are, among others, to promote research and devel-

opment with a view to improving forest management and wood utilization, and to encourage the development of national policies aimed at sustainable utilization and conservation of tropical forests and their genetic resources while maintaining the ecological balance in the region concerned. Obviously the ITTA objectives are first and foremost concerned with the improvement of rational management, utilization of forest resources, the prevention of forest resources depletion and forest degradation in order to secure the supply of tropical timber to local and intenational markets. They are therefore said to be somewhat more prevention-oriented than cure-oriented since, as one would say "prevention is better than cure". Taking into account the topic of our symposium, I would like to say that activities undertaken by ITTO in this case are directed towards minimizing the degradation of forests and hence the need for rehabilitation of degraded forest lands. The rationale for this approach is quite clear and derives from both the advantages of maintaining forest lands under natural forest cover through sustainable forest management practices and the difficulties inherent in the successful rehabilitation of degraded forest lands. I am sure these aspects will be developed more thoroughly in the technical papers to be presented later. However let me mention some advantages associated with the maintenance of tropical forests in forest lands:

- The conservation of biological diversity;
- The maintenance of a sound environment and its potential contribution to the overall environment;
- The conservation of forest productivity resulting in the continuous exploitation of forest resources;
- The improvement of the living conditions of local population on a sustainable basis.

Among the difficulties inherent in the rehabilitation of degraded forest lands, one could mention:

- Insufficient information concerning the appropriate patterns of rehabilitation schemes to be applied, and future development of the new ecosystem established, even if it is admitted that a large amount of work has already been done in this domain;
- Limitation in the choice of forest species to be used for any given site condition and/or state of degradation, and sometimes, insufficient information on breeding, plantation development and yield concerning such species;
- Insufficient information on the mechanisms to be applied to get the local population involved in the rehabilitation process;
- Difficulty in developing an accurate methodology for the prior assessment of the impact of rehabilitation schemes on the living conditions of the local population and their potential adaptation to the new environment;
- The importance of the resources needed for some rehabilitation schemes.

Great emphasis has, therefore, been placed by ITTO on activities leading to sustainable forest management in the tropics, consistent with ITTA objectives and in the light of the above-mentioned considerations. To that end 4 major basic contributions have been made so far in terms of policy formulation, in the form of guidelines.

- Criteria for the Determination of Sustainable Forest Management,
- Guidelines for the Sustainable Management of Natural Tropical Forest,
- Guidelines for the Sustainable Management of Planted Tropical Forest,
- Guidelines for the Conservation of Biological Diversity in Tropical Production Forests. Except for this latter set of guidelines which are still under consideration by ITTO member countries before being published, all the others have been widely disseminated.

In conjunction with the development of these policy guidelines in these 4 basic fields, ITTO has also formulated a Strategy-familiarly called "Target 2000" which was adopted during the 10th Session of the ITTC held in Quito (29 May • 6 June 1992). The objective is to realize by the year 2000 trade in tropical

timber products from sustainably managed forests. This strategy involves the three Permanent Committees activities and includes, *inter alia*, the development and dissemination of criteria for the determination of Sustainable Tropical Forest Management as mentioned above, the assessment of resources and incentives needed to achieve the objective, the development, dissemination and application of guidelines of best practices in forest management and tropical wood conversion and utilization with the technical and financial support of consumer countries, the investigation into tropical timber sale and pricing systems, and the development of a reporting framework to review progress towards this objective.

One would immediately point out that it is not an easy task to bring approximately some 810 million ha of tropical forests of the ITTO member countries under sustainable management when it is estimated that less than 10% of these forests are sustainablly managed today. It must be admitted, however, on the one hand that these estimations vary largely according to the criteria used to determine which forest could be considered as sustainably managed, and on the other not all tropical forests are intended to produce timber for international trade. In the latter case it is estimated that 40 million ha should be sustainably managed to secure the current volume of international tropical trade and 140 million ha to secure the supply of the local demand of industrial timber in the producer countries concerned (WWF, 1991). And indeed it is not an easy task, specially when one has to take into account that in order to make the whole process socially, economically and ecologically justifiable necessary improvements have to be introduced at the levels of tropical timber industry and tropical wood utilization and trade in addition to tackling forest resources management issues. This has led the ITTC and the Permanent Committes to adopt a Plan of Action for ITTO.

This Plan of Action aims at identifying priority areas for program development and project work in order to ensure optimal use of scarce reources, especially of personnel and funds. The plan outlines basic strategies underlying programs of work to be undertaken by the three Permanent Committees.

The importance of forest land rehabilitation in the ITTO Action Plan

In ITTO's mandate to bring tropical forests under sustainable forest management, the rehabilitation of degraded forest land is a crucial factor and ingredient. Indeed, it is reported that "forests in developing countries have declined by nearly half in this century, and the rate is still increasing". Recent studies have also found that the rate of deforestation is currently in the range of 17–20 million ha/yr, the largest being the tropical moist forests (World Bank, 1991). There are, therefore, already vast areas of degraded forest lands needing rehabilitation ; with, alas, still much more to come. Indeed as nature goes, it is unlikely that the degradation of tropical forests will be completely stopped in the immediate future, given also the fact that such a phenomenon is basically associated with essential livelihood activities of the rural poor in the regions concerned, namely fire wood exploitation, extensive livestock breeding and subsistence agriculture or shifting cultivation. It is reported that shifting cultivation contributes to 70% of annual deforestation in Africa Region (IUCN, 1989). It would, at this stage, be unrealistic to think that this process of forest degradation will significantly go down in the very near future :

- The population involved is increasing steadily at an average of 3% per year (UNESCO 1979) ;
- Social and cultural factors make it difficult to envision any significant change in actual agricultural practices without a very strong education and institutional reform input ;
- Sytems of intensive, productive and stabilized agriculture still need further improvement and to be refined and adapted to specific local conditions and the technology developed to be transferred successfully to target population ;
- The economic condition of the population concerned constitutes a great barrier to be overcome in the adoption of new technologies and agricultural practices ;
- Research and development on the economic and sustainable utilization of other forest resources as a complement o alternative to agricultural activities still need further improvement ;
- More research is still needed to make new sources of energy and/or technologies for sufficient

energy conservation economically accessible to the local population concerned.

In addition to rural activities, some other hazards are responsible for tropical forest degradation, such as bush fires. We recall the fires which destroyed over 4 million of Amazon forests in 1988 or, closer, those which destroyed 2.7 million ha, 1,459 ha and 50,000 ha of tropical forests respectively in 1982/1983, 1987 and 1991 in East Kalimantan, Indonesia. In connection with the latter ITTO has a project which it is currently implementing to assist the Indonesian authorities to come to grips with this crisis.

The rehabilitation of degraded tropical forest lands to restore or improve the productivity and the environmental condition of the affected area remains, therefore, an activity of utmost importance.

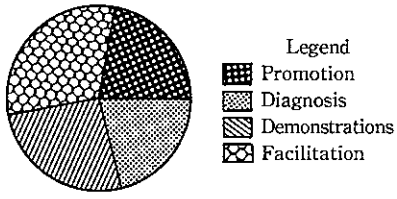
In the ITTO Plan of Action the rehabilitation of degraded forest lands in the tropics falls under the responsibility of the Permanent Committee of Reforestation and Forest Management, which is mainly concerned with activities related to man-made and natural tropical forests. The rehabilitation of degraded tropical forest lands is an integrated part of these activities, provided that tree planting and/or natural forest development is a major component of the rehabilitation scheme. The Permanent Committee may therefore take any among the four types of actions provided for in the Action Plan concerning a degraded forest land to be rehabilitated, namely:

- Promotion activities-these activities aimed at persuading all those engaged in natural tropical forest management or affected by it.
- Diagnosis activities-concerned with further examination of critical issues to determine exactly where action is most needed and what action should be taken.
- Demonstration projects-to publicize examples of successful models of operation which can be used elsewhere and to develop new models where necessary.
- Facilitation projects-to provide assistance for more rapid and more effective expansion of successful management practices on a large scale.

More specifically, the Plan of Action has outlined some major problems encountered in the field of reforestation and forest management and their corresponding opportunities. One of these problems is the accerating depletion and degradation of the tropical forest base and its resources; and, among the measures to tackle this problem, the development of integrated land use planning and sustainable agriculture systems and measures for rehabilitation of degraded forest lands were identified.

Table 1 Distribution of RFM projects, pre-projects and activities according to the broad activity classification adopted by the Permanent Committee of RFM

Broad Activity Classification	Projects, Pre-projects and Activities			
	Funded		Not Funded	
	Number	Amount	Number	Amount
Promotion	18 (23%×95%)	2084132 (6%×89%)	1 (5%×5%)	255000 (1%×11%)
Diagnosis	24 (30%×83%)	6203201 (19%×50%)	5 (23%×17%)	6259623 (23%×50%)
Demonstration	22 (28%×65%)	14374878 (44%×51%)	12 (55%×35%)	14070630 (52%×49%)
Facilitation	15 (19%×79%)	10260777 (31%×62%)	4 (18%×21%)	6356442 (24%×38%)
Total	79 (100%×78%)	32922988 (100%×55%)	22 (100%×22%)	26941695 (100%×45%)



Rehabilitation in ITTO's project work

Activities in the field of reforestation and forest management account actually for about 70% of ITTO project work. Table 1 outlines the activities in this field as of May 1992 according to the broad activities classification adopted by the Permanent Committee of Reforestation and Forest Managment.

Rehabilitation activities are carried out either through specific projects or in the context of integrated forest management projects. Table 2 outlines specific rehabilitation projects. Table 3 outlines integrated forest management projects with a specific forest land rehabilitation component, approved by the Council.

Table 2 Specific forest land rehabilitation projects approved by the ITTC

Project Code	Title	Total cost (US$)	Country	Remarks
PD 17/87(F)	Investigation of the steps needed to rehabilitate the areas of East Kalimantan seriously affected by fire	367,600	Indonesia	Completed
PD 84/90(F)	The establishment of a demonstration plot for rehabilitation of forest Affected by fire in East Kalimantan [Phase II of PD 17/67(F)]	704,000	Indonesia	Operational
PD 115/90 REV. 1(F)	Rehabilitation of natural forest	550,797	Malaysia	To start soon
PD 172/91 Rev. 1(F)	The recovery of natural systems of the hillsides of Caqueta	1,065,250	Colombia	Waiting financing
Total		2,687,647		

Table 3 Forest management projects with a specific component of forest land rehabilitation

Project Code	Title	Total cost (US$)	Country	Remarks
PD 2/87(F)	Rehabilitation of logged-over forests in Asia/Pacific Region	1,227,100	Asia/ Pacific	Operational
PD 176/91 Rev. 1(F)	Sustained management for production, conservation, demonstration, diffusion and promotion activities in moist tropical forests in Ecuador's Northwest	714,670	Ecuador	To start soon
PD 202/91 Rev. 1(F)	Sustainable forest management through collaborative efforts	990,000	Thailand	To start soon
Total		2,913,770		

From the information provided in Tables 1, 2 and 3, one could easily record that 7 projects in the forest land rehabilitation field of activities have been approved so far by the Council for a total amount of US$ 5,619,417, viz 9.4% of total funding sought for approved projects in the field of Reforestation and Forest Management. The financing of 6 of these projects has been secured for a total amount of US$ 4,554,467, viz 13.8% of total budget so far secured for approved projects in the field of Reforestation and Forest Management. The financing of 6 of these projects has been secured for a total amount of US$ 4,554,167, viz 13.8% of total budget so far secured for approved projects in the field of Reforestation and Forest Management.

Case study of Project PD 2/87(F)
"Rehabilitation of logged-over forests in Asia/Pacific Region"[1]

The project was approved by the ITTC during its Third Session held in Yokohama on 16-20 November 1987 for a total budget of US$ 1,227,100. The overall objective of the project was initially to rehabilitate all logged-over forest areas, which are not required for higher economic use, and restore their timber-producing capacity in six ITTO member countries: India, Thailand, Malaysia, Philippines, Papua New Guinea and Indonesia. The project was conceived and formulated around the following elements:

- Design of a classification system leading subsequently to the determination of the extent of degraded forest lands in the countries concerned according to state of degradation and classes of rehabilitation;
- Research to develop prescriptions for treatment for logged-over forests at various stages of degradation in order to restore their productive capacity, after a thorough review of existing information and current research activities;
- Implementation of field trials and demonstration projects;
- Dissemination of project's results through manuals, seminars and workshops in order to promote field development activities.

Due to financial implications, it was deciced to implement the project in several phases, each phase being part of the whole process and designed in such a way that its outputs should contribute to the achievement of the project objectives. The Project's activities started in April 1991 and two phases have since then been developed by the Japan Overseas Forestry Consultants Association (JOFCA), the Implementing Agency of this project. Phase I, completed, and which could be really seen as a pre-project activity, was focused on a countrywise review of the current knowledge on the status and treatment of logged-over forests in Asia/Pacific.

Phase II, under implementation, should produce two major outputs:

- A manual of a classification system for logged-over forests, relevant to silvicultural activities to restore timber-producing capacity of the forests concerned.
- Assessment of extent of logged-over forests in Tropical Asia, specified by categories according to the classification system.

Activities undertaken so far have been directed to produce the first major output of the sub-project and included:

1 The development of a tentative classification system based on the concept of ecofloristic zones formulated by Prof. F. Blasco and published in the FAO document entitled "Classification and Mapping of Vegetation Types in Tropical Asia". Initially 4 criteria were considered based on ecological, floristic, phenological and physiographic factors.

The association of ecological, floristic, phenological and physiographic factors led to the identification of 10 eco-floristic zones, even if later on an additional one was proposed to address the special situation of forests located over 1,500 m of elevation in mountainous areas. Within these eco-floristic zones, subtypes have been distinguished taking into account the physiognomic criterian. In connection with the rehabilitation treatment, 3 formation classes have been identified for rehabilitation purposes, based mainly on the crown density of the vegetative cover: closed forest, open forest and scrub forest. With regard to the treatment categories, the following silvicultural systems have been considered: natural regeneration, artificial regeneration, reforestation and af-

1 Information provided under this item, including Figure 1, is derived from progress reports drafted by JOFCA or reports of the Project Steering Committee.

forestation.

To apply any given silvicultural system to any logged-over forest stand two major inputs are required:

- the precise definition of the rehabilitation objectives and the results to be achieved,
- quantitative data on site condition based on a diagnostic survey, especially with regard the composition, structure and quality of existing vegetation, topography, soil, meteorological and socio-economic conditions.

The whole process of matching the classification system of logged-over forests with the potential silvicultural treatments is shown in Fig.1. In this case the objective of the rehabilitation has been defined as mainly to restore the productivity of the forests concerned to produce in industrial timber.

2 A ground verification of classification classes and their correspondence to treatment requirements undertaken in the Philippines and Thailand in 100 m² plots selected according to the following criteria:

- reprensentative example of the forest type to be investgated,
- availability of recent satellite imagery,
- accessibility,
- availability of reasonably accurate historical data on the site.

This truthing exercise has led to the improvement, on the one hand, of the methodology of ground survey and on the other hand the classification system.

3 An iterative process involving frequent reviews of the system, either before or after the ground test, and leading to successive improvements. In this connection 2 workshops have been organized on 26 July 1991 and 16 December 1991, involving senior foresters of the countries concerned, to review the tentative classification system, in addition to useful individual or group feedbacks provided for the classification system and reviews of the project by the Project Steering Committee.

This consultative process highlighted some major considerations concerning the classification system under development:

- The precise definition of the purpose of rehabilitation and the desired results of various treatments;
- A careful review of actual site condition according to a reliable methodology. This should not however offset the necessity to make the review cost-effective and designed in relation with the information needed for the rehabilitation purpose;

In this connection the potential use of remote sensing should be carefully scrutinized.

- The classification should be flexible enough to take into account national land use and forest policies;
- The classification system should also be of user-friendly application and lead to clear and rapid decision making;
- Environment requirement and agroforestly considerations are important components to be integrated into rehabilitation schemes;
- The costs of rehabilitation options need to be carefully assessed.

In conjunction with the above activities a survey of logged-over forests of the countries concerned by remote sensing and assessment of the potential of this approach for a classification system for logged-over forests were made.

This second phase of the project is expected to be completed soon.

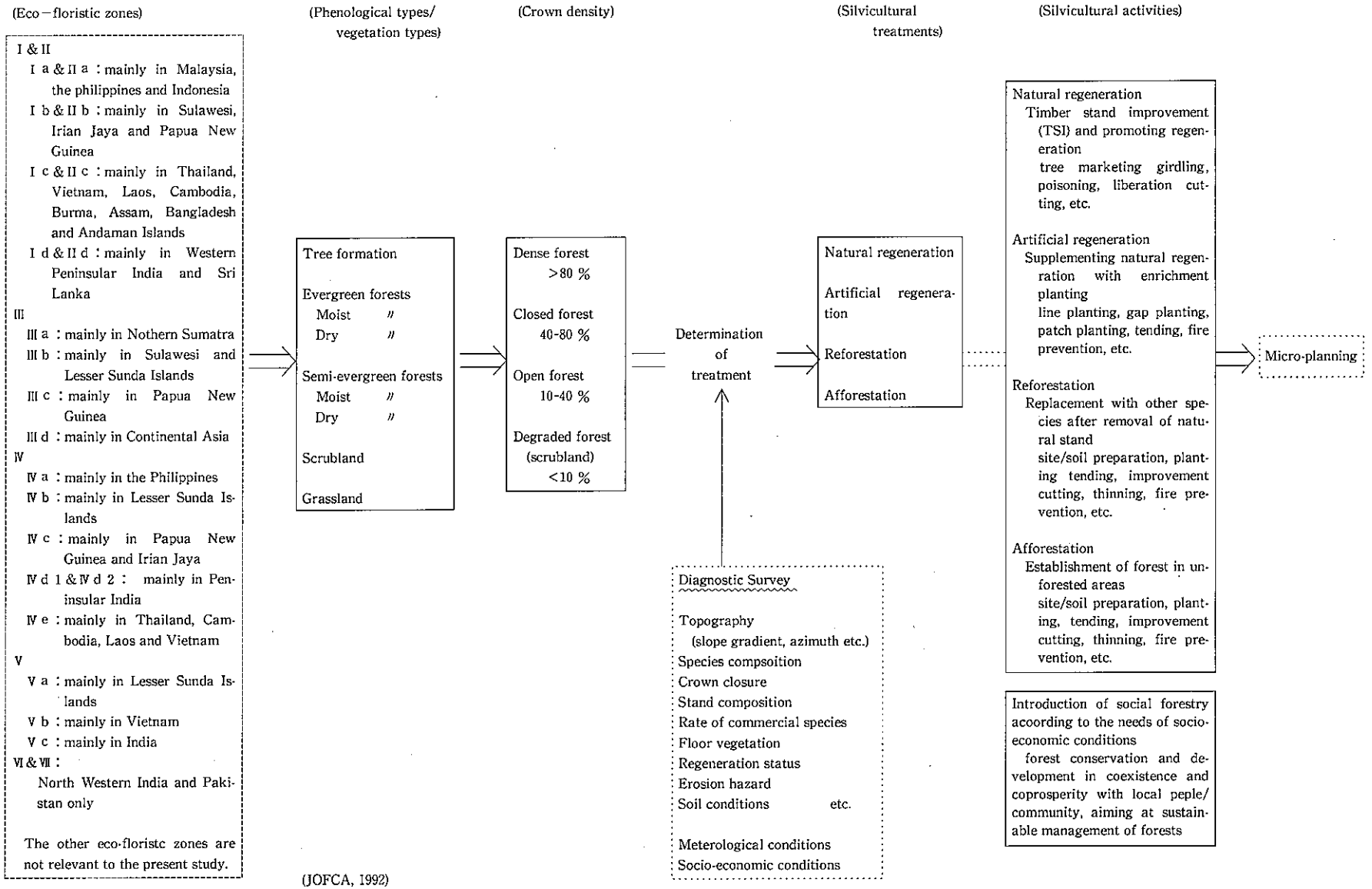


Fig. 1 CLASSIFICATION SYSTEM FOR LOGGED-OVER FORESTSWITH DIRECT RELATION O THE SILVICULTURAL TREATMENTS

I hope that I have been able to provide more light on ITTO's objectives and activities with regard to the sustainable tropical forest management in general and the rehabilitation of degraded tropical forest lands in particular, and to highlight the kind of acitivities undertaken ITTO to address this important issue.

Thank you for your kind attention.

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