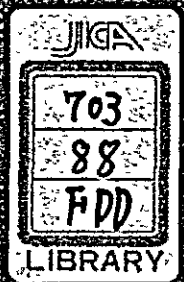


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REPORT OF
FEASIBILITY SURVEY (SECOND SURVEY)
ON
FORESTRY DEVELOPMENT PROJECT
IN
AMAZON AREA BRAZIL

FEBRUARY 1978



JAPAN INTERNATIONAL COOPERATION AGENCY

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JAPAN INTERNATIONAL COOPERATION AGENCY

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Preface

The relations between Brazil and Japan in the fields of forest and forestry have become increasingly active in recent years both on the governmental and nongovernmental levels. Particularly, it is a matter of congratulation that studies on the possibility of development cooperation based on the survey conducted by the Japan International Cooperation Agency and on cooperation through the dispatch of experts in the sector of forestry technology have been conducted.

It is against this background that the Second Team for Feasibility Survey on Forest Development Project in the Amazon Area was sent to Brazil under the leadership of Mr. Katsuhiko Kotari, Special Assistant to the President of JICA, for 31 days from October 13 to November 12, 1976, to study the basic planning of the afforestation project following the first pre-feasibility survey carried out in November 1975.

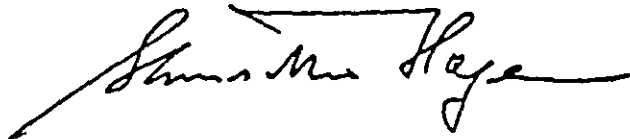
Needless to say, the forest resources which are invaluable not only for Brazil but also for the rest of the world should be properly utilized and afforested in a long-range and systematic perspective. But for that purpose it is necessary to conduct adequate survey, planning, testing and research prior to the implementation of forest

projects. In order to carry out these activities effectively close cooperation between Brazil and Japan is needed.

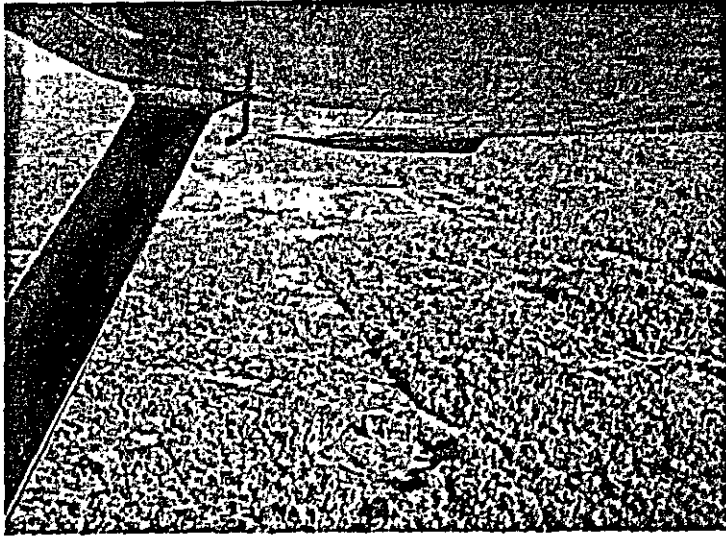
The afforestation project under the present survey is viewed with great expectation and interest by the Government and people of Brazil as a regional development project through private cooperation between Brazil and Japan. I am quite certain that the project will greatly contribute to the development of Brazil and Japan and to their mutual understanding.

I wish to express my sincere appreciation to the officials concerned of the Forest Development Agency and other institutions of the Brazilian Government as well as to those of the Japanese Government for their close cooperation.

February 1978

A handwritten signature in black ink, appearing to read "Shinsaku Hogen". The signature is fluid and cursive, with a long horizontal stroke at the end.

Shinsaku Hogen
President
Japan International
Cooperation Agency



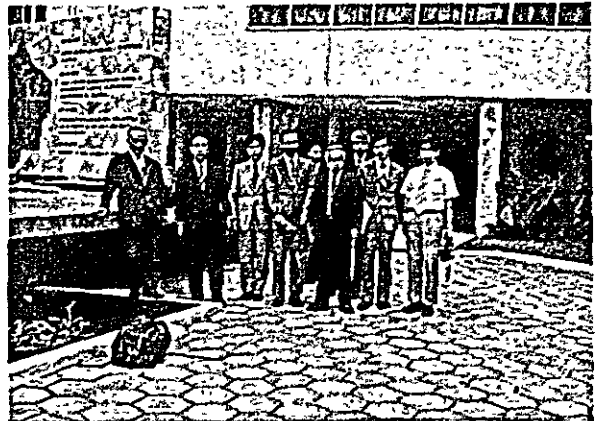
Plant under joint Brazilian-Japanese undertaking
and experimental reforestation area



Experimental reforestation
area



Trees planted in memory of the
first pre-feasibility survey



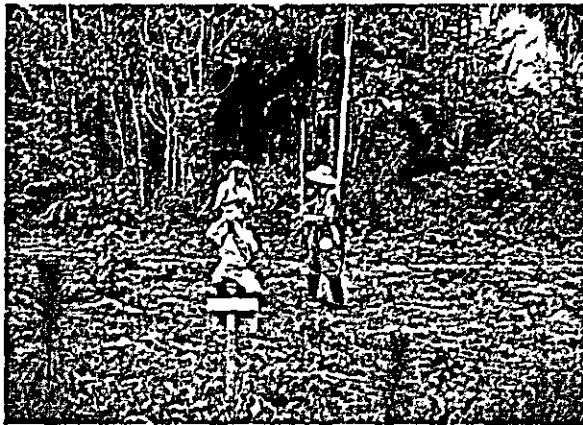
In front of the entrance to SUDAM



Ship chartered for the survey



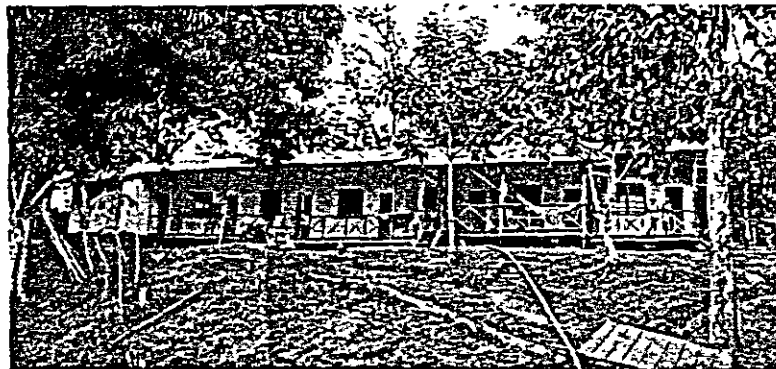
Means of transport for workers



Experimental reforestation
area in Piarim



Experimental reforestation
area in Piarim



Office and billet in Piarim

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I. Introduction

I-1 Purpose of the Survey

The forests of Brazil are about 15 times as wide in area as the total land of Japan, and about 70% are situated along the Amazon River. Primarily, the forests along the Amazon River are tropical rainforests and blessed with abundant forest resources. As they are located far away from markets and the means of long transport have yet to be developed, however, the forests remain relatively underdeveloped.

The Government of Brazil is actively engaged in promoting a comprehensive development of the basin of the Amazon River, while giving priority to the development of related facilities and applying preferential measures to investments in the development. Of all these measures, the development of underdeveloped forests constitutes an important part.

In conjunction with the development of forests in the basin of the Amazon River, there are strong calls for the conservation of useful broad-leaved trees. With this in mind, the first pre-feasibility survey was performed in November and December 1975 in an attempt to explore the possibility of establishing a method for the restocking of the tropical rainforests and developing tree-felled

and other areas with useful broad-leaved trees -- preferably with local species.

As a result of the first survey, the following matters were clarified:

* The cooperation in forestry between Brazil and Japan is all the more important for the development of the forestry and forest product industry which will assure the conservation of the forest resources in the basin of the Amazon River which are invaluable for Brazil.

* There is need to come up with a systematic treating method from felling to restocking in the light of the natural conditions in which the basin of the Amazon River is placed.

* It is necessary to embark at an early time on the development and utilization of unused species of trees with basic tests in conjunction with the fabrication and utilization of lumber.

* The joint undertakings are highly interested in the forestry development of the area.

The second survey was designed to hold talks with the Government of Brazil and other institutions on the way in which the cooperation should be stepped up for the reforestation project of Belem and its periphery, which were

considered suitable for reforestation as a result of the first pre-feasibility survey and to carry out an on-the-spot survey so as to secure more detailed information and data for the formulation of a basic concept.

I-2 Composition and Itinerary of the Survey Team

<u>Name</u>	<u>Organization</u>
Katsuhiko Kotari (Leader)	Special Assistant to the President, Japan International Cooperation Agency (JICA)
Kiichiro Hara	Vice Director, Forest Conservation Division, Forestry Agency, Ministry of Agriculture and Forestry
Masayuki Hori	Executive Director, Japan Forest Technical Association
Dr. Kazuto Arimatsu	Head, Soil Survey Section, Government Forest Experiment Station, Ministry of Agriculture and Forestry
Dr. Motoaki Okuma	Assistant Professor, University of Tokyo
Masayoshi Miyamae	Development Division, Forestry Development Cooperation Department, JICA

Survey period: October 13 ~ November 12 1976

Number of days	Date	Day of the week	Activities
1	Oct. 13	Wed.	Leaves Tokyo.
2	14	Thu.	
3	15	Fri.	Arrives at Belem and visits the Japanese Consulate General for a courtesy call and a talk.
4	16	Sat.	Visits the plant of Eidai do Brazil Madeiras S.A. and a plantation area for a survey and a talk.
5	17	Sun.	Visits the botanical garden and others (Bosque, Museu) and collects data.
6	18	Mon.	Visits RADAM, IBDF and SUDAM for a courtesy call and a talk.
			Kotari, Hara, Arimitsu and Miyake
7	19	Tue.	Belem → Portel → Rio Piarim
8	20	Wed.	Field survey.
9	21	Thu.	Kotari
10	22	Fri.	Rio Piarim → Portel → Belem
11	23	Sat.	Talk with the Consulate General.
			Hori
			Okuma
			Belem → Santarem. Surveys CTM.
			Collects necessary information and data for aerial surveying from RADAM, SUDAM and others.
			Surveys a national natural forest.
			Santarem → Belem
			Surveys a lumber plant.
			Belem → Breves. Surveys a lumber plant.

		Activities		
Number of days	Date	Day of the week	Activities	
12	Oct. 24	Sun.	Checking data.	Breves → Rio Piarim
13	25	Mon.	Talks with SUDAM and others.	Breves → Rio Piarim
14	26	Tue.	Belem → Brasilia	
15	27	Wed.	Pays a courtesy call at the Japanese Embassy and visits INCRA for a talk.	
16	28	Thu.	Visits and surveys the Onoyama nursery for garden products.	Field survey.
17	29	Fri.	Visits the Ministry of Interior, Ministry of Foreign Affairs and IBDF for a courtesy call and a talk.	
18	30	Sat.	Brasilia → Sao Paulo	Rio Piarim → Portel
19	31	Sun.	Checking data.	Surveys Cia. Amazonas S.A.'s plantation area. Portel → Belem
20	Nov. 1	Mon.	Talks with the Consulate General.	Talks with the Consulate General and surveys the plantation area of Santaizabel Agro-Forestal Ltd.
21	2	Tue.	Leaves Sao Paulo.	Checking data.

			Activities	
Number of days	Date	Day of the week		
22	Nov. 3	Wed.	Talks with IBDF, SUDAM and others.	
			Hori	Hara, Arimitsu, Okuma and Miyamae
23	4	Thu.	Belem → Rio de Janeiro Belem → Brasilia. Visit the Japanese Embassy for a courtesy call and a talk.	
24	5	Fri.	} Collection and sorting of information and data necessary for aerial surveying.	Brasilia → Rio de Janeiro
25	6	Sat.		
26	7	Sun.	Arrives at Tokyo.	
27	8	Mon.	Visits the Instituto Florestal for a talk.	
28	9	Tue.	Visits Cia. Agro-Pecuaria Fazenda. (Okuma: Visits IPT for a talk.)	
29	10	Wed.	Leaves Sao Paulo.	
30	11	Thu.		
31	12	Fri.	Arrives at Tokyo.	

II. Promotion of Development Cooperation

II-1 Basic Concept

One of the questions that are posed in conjunction with this survey of the Piarim area (down reaches of the Amazon River) is the fact that although this area has a vast expanse of forest resources, a very limited number of varieties are usable in terms of business. In other words, the lumber processing industry has yet to be developed in this area as in the case of every other place along the Amazon River. For this reason, a possible exhaustion of the commercial varieties which are available at present is taken up as a serious question. If these commercial varieties are felled, the value of the remaining forests will be minimized for the time being. Moreover, when an attempt is made for reforestation in the area where the forests are treated in this manner, the noncommercial forests which exist in large numbers will have to be felled in one way or the other. Therefore, when an attempt is made to work for a legitimate reforestation in the Amazon basin -- particularly, for the development and maintenance of forest resources, there is a need to carry out a prudent study for an effective utilization and development of lumber and also for the formulation of a technically reasonable reforestation system. In this context, there exist many questions that have yet to be clarified. Under the Pol

Amazonia project, strategic areas are designated for each sector in the whole of the Amazon basin. Although there is progress in the development of roads which will be indispensable for its development, the conditions for the logging and transport of forest products (particularly, material wood) are not well developed, and an immediate improvement is not foreseeable.

Therefore, when the development of forestry is to be stepped in the Amazon basin, an attempt should be made first for an effective utilization of a wide variety of unused trees which are not observed in other countries or areas. In other words, the prerequisite is to work for the development of forestry which will be tied in with a clarification of the basic technologies required for reforestation. The development of forestry in the future must also be tied in with all programs for the development of the entire area of the Amazon basin. For this reason, it is desirable that priority be given to technical cooperation between the governments of Brazil and Japan at least in the development of forestry technology.

With respect to development cooperation on a non-governmental basis, it is necessary, more than anything else, to re-examine the various systems of cooperation in the light of the importance attached to the forests of the Amazon basin, before closer cooperative relations are

established both on the governmental and nongovernmental bases.

II-2 Nongovernmental Cooperation Projects

As described in the first report on the Amazon basin reforestation project, the joint Brazilian-Japanese lumbering undertakings which exist in the Amazon basin have strived to acquire areas suitable for reforestation in order to accomplish the obligation of reforestation (planting of four trees per one cubic meter of lumber used by a related undertaking) under the Forest Law of Brazil and also have had the intention of calling for funds and technical cooperation from Japan to accomplish the obligation. It is only natural, therefore, that these businesses should strive to know fully about the actual conditions of the areas in which reforestation is scheduled to be made and establish a systematic operation from felling to regeneration, which is suitable for the natural conditions. At the same time, it is only natural that they have hoped to make use in one way or the other of the guidance of the local government and the various systems of JICA which were established before or after the formulation of this reforestation project. Under these circumstances, the first survey was performed in 1975 as a development cooperation project. The results are:

(1) The Brazilian side took an unusual interest in the development of Piarim and its periphery in the lower reaches of the Amazon River; and

(2) The survey team came to realize the necessity of development cooperation through nongovernmental Japanese businesses for the purpose of contributing to the development of the forest and forest product industry which will make it possible to develop invaluable forest resources in the Amazon basin in the right way.

Against this background, the second survey was performed. The following changes that have taken place in the meantime are clarified:

a. Amidst the situation where the demand for lumber fell down and later was stagnant in the light of the world's economic conditions -- particularly, a global recession, the stagnant demand not only in the domestic market of Brazil, which is the primary market for the lumber processing industry of this area, but also in the Western markets has brought about a great impact, and big businesses of American affiliation have been forced to shut down their plants along the lower reaches of the Amazon.

b. The inflation of Brazil has become all the worse in the recent several years with the result that there is

an increasingly widening gap in exchange between the Japanese yen and the Brazilian currency. The businesses which have been given loans from Japan are in the danger of sharing heavy burdens in the foreign exchange, regardless of their business accomplishment.

c. With respect to the basic technologies required to step up reforestation on a business basis, there are too many matters that have yet to be solved. If trials and errors were repeated for the clarification at their own risk, they would have to put up with an excessive economic burden.

d. In the light of the current policy and system of Brazil, the situation seems to be fairly severe for active investments in the forestry -- particularly, the reforestation -- which call for investments on a long-term basis, so that it seems to be difficult for the businesses to go as far as to commit themselves in the redevelopment of the forests of the Amazon basin.

In the light of these factors, the emphasis of the nongovernmental reforestation project is focused on how the existing forests may be put to effective use. In regard to reforestation investments for the regeneration of resources, their efforts are confined to the obligated reforestation to which reference has been made earlier. The businesses have not come to a stage where they may

embark on a systematic development project. In the light of this present situation, the main themes of cooperation, whether it be given from the Japanese Government or a private Japanese business, may be summerized as follows:

(1) Acquisition of basic data related to the forest resources which will be required for the formulation of a systematic forestry development program.

(2) Development of lumber processing techniques with higher added values by making use of presently available good varieties.

(3) Experiment, research and development of techniques for the utilization and processing of unused varieties.

(4) Development of felling and transporting techniques and development of the related infrastructure.

(5) Implementation of a basic experiment for the establishment of an effectice and economical method of regeneration of tree-felled areas in parallel to (1) through (3), above.

(6) When the obligation of reforestation stipulated in the existing forest law (however, it is stipulated that there will be no need for plantation in areas where natural regeneration is feasible) is performed, it will be necessary to secure an area for new plantation. For the acquisition

of this land, there will be need for institutional cooperation from the Brazilian side.

Of the aforementioned forms of cooperation, there might be some which would have to be extended by businesses at their own effort or risk.

The point that should be emphasized in this report is the fact that there are so many questions that have yet to be solved, as pointed out earlier, for the location of industry, as the Amazon basin happens to be the world's most underdeveloped and widest area. It is also a fact that the forests in this basin are the biggest of them all in the world and contain the extremely valuable forest resources which will have to be left on the earth. In order to step up the development cooperation of Japanese private businesses in the Amazon basin where the development of forestry is to be emraked upon by Western nations both on the governmental and nongovernmental bases, there will be need to work out drastic measures for incentives and preferential treatment, which are different from those available in other areas. With respect to the experiments for reforestation, for example, the possibility of extending subsidy-like loans (which could be repaid only after the venture proves successful), loans at extremely low interest rates, compensation for losses in foreign exchange or a direct loan system must be studied. In addition, demonstrations in such technically problematical areas on a

governmental basis would make it easier for private businesses to commit themselves in the development.

II-3 Cooperation Projects on Government-to-Government Basis

The Brazilian Government has thus far stepped up the development of many basic technologies on the basis of multinational cooperation, such as from FAO. It hopes to solve many questions in the future, too. As mentioned earlier, it is necessary for Japan to extend active cooperation in forestry in the light of its close relations with Brazil, and the following specific matters must be solved in this respect for the time being:

(1) Technical cooperation on a government-to-government basis for the formulations of a program required for the comprehensive control (familiarization with the realities of forests, selection of reforestation methods, effective utilization of unused varieties of trees, development of the infrastructure, etc.) of the Verzea forests along the lower reaches of the Amazon River, the quality of which is reported as having been dropped due to the felling of good trees only; and, if this program is feasible, cooperation in a project for demonstrations in the state-owned land in the lower Amazon area.

(2) Dispatch of experts in conjunction with the lumber processing and reforestation projects of CTM in Santa Lain for the continuous and effective development of the existing Brazilian demonstrations and researches associated with reforestation and lumber processing.

(3) Research cooperation in the yet-to-be clarified sectors, such as forest soil, forest damage by insecticides, forest animals. etc., in the Amazon forests.

