

⑤ 評価の範囲

基本的には目標達成度評価とし、政治・外交的評価、人道的社会的評価を加える。

⑥ エバリュエーション調査団での指摘事項

その後のフォローアップ状況を調査し、今後の技術協力の必要性を検討する。

8. 調査団員の業務分担について

分	財	業務分担	本件に関する具体的な業務内容
団長・総括		<ul style="list-style-type: none"> 事後評価調査の実施方針の取りまとめ 先方関係者のプロジェクトに対する評価聴取 先方関係者に対する調査の目的、範囲等の説明 調査の概要の帰国後報告、報告書作成総括 調査団員の統率取りまとめ 	<ul style="list-style-type: none"> 本報において事後評価要綱等を取りまとめる。 現地大使館 LAU、先方政府関係者への今回の調査団派遣の主旨、目的調査の範囲につき説明し協力を要請する。 事後評価の意義・目的につき先方に説明し、先方のプロジェクトに対する評価をヒアリング、整理する。 先方の対応の確認及び今後の技術協力への必要性に対する先方の感銘を把握する。 事後評価合意書（ミニッツ）取まとめ
評価手法		<ul style="list-style-type: none"> 本件に係る事後評価要綱の作成 本件事後評価に必要な情報収集、現地での調査実施 現地におけるプロジェクトの実地調査 新規案件に対する政策的見地からの調査 	<ul style="list-style-type: none"> 事後評価要綱の作成 現地において事後評価に必要な情報収集、ヒアリングを行う。 現地においてプロジェクトサイトを実地調査する。 政策的見地から、現地政府等から事情聴取・必要資料の収集を行う（特に社会的、外交的評価）。 報告書の作成（評価手法）
業務調整		<ul style="list-style-type: none"> 団員を精査し、調査活動に必要な業務実施 事後評価要綱細目、クエスチョネアの作成、C/Pの活動状況につき調査、報告 団長・団員のロジスティックスサポートを図り、調査活動の円滑を図る。 	<ul style="list-style-type: none"> 先方との詳細日程の打合せ、アポイントメントの取付け 事後評価要綱細目の作成 クエスチョネアの作成、現地での回収作業 先方からのヒアリング、現地調査を通じてC/Pの定着度、研修の実施状況等の把握 事後評価合意書（ミニッツ）取まとめ 空港・トランジットにおける団員のサポート 通訳、タクシー等交通手段の確保、調査費の管理等ロジ面のサポート 報告書の作成（C/Pの活動状況）
製紙技術		<ul style="list-style-type: none"> 製紙技術の移転の状況につき専門的見地からの調査、報告 	<ul style="list-style-type: none"> 先方からのヒアリング、現地調査を通じて技術移転状況の把握での技術的課題点及び解決の方策につき検討 報告書の作成（製紙技術）
機械		<ul style="list-style-type: none"> 供与した製紙機械関係の保守・運転状況の調査、報告 	<ul style="list-style-type: none"> 先方からのヒアリング、現地調査の実施を通じて機械の稼働状況、利用状況、故障の有無、補修の必要等につき把握する。 報告書の作成（機械）

2. Questionnaire

QUESTIONNAIRE FOR THE EX-POST EVALUATION
ON THE JAPANESE TECHNICAL COOPERATION
FOR THE PULP AND PAPER QUALITY IMPROVEMENT PROJECT
IN THE ORIENTAL REPUBLIC OF URUGUAY

November 7, 1988

To: the Authorities Concerned of the Government of the Oriental
Republic of Uruguay

From: the Authorities Concerned of the Government of Japan (JICA)

The Government of Japan plans to implement the Ex-Post Evaluation on the Japanese Technical Cooperation for the Pulp and Paper Quality Improvement Project in the Oriental Republic of Uruguay (hereinafter referred to as "the Project") in the Japanese fiscal year 1988, and to send an Ex-Post Evaluation Team at the end of November. The purpose of the Team is to survey the present situation of the Project through both field surveys and a series of discussions with the authorities concerned of the Government of the Oriental Republic of Uruguay.

In order to make the activities of the Survey Team as effective as possible, the Government of Japan would like to get relevant data and information on the present situation of the Project by asking some questions mentioned below. It would be much appreciated if the authorities concerned of the Government of the Oriental Republic of Uruguay send the answers back to JICA as early as possible so that the authorities concerned of the Government of Japan could give a careful consideration before sending the Survey Team.

1. Questions on the Implementation of the Ex-Post Evaluation for the
Project

1) The activities of LATU since the end of the Project

a. Budget allocation for the Project (1985 ~ 1989)

b. Staff allocation for the Project (1985 ~ 1989)

c. Research activities of LATU since the end of the Project

(including the operation of the Equipment provided by the

Japanese side)

d. Cooperative work with private companies

2) Ex-post evaluation by the Uruguayan side

a. Please make a brief evaluation report by the Uruguayan side in reference to Final Joint Evaluation Report signed on March 13, 1986.

3) Present situation of LATU

- a. Present organization chart
- b. Budget allocation
- c. Staff allocation
- d. Present positions and activities of the former counterpart personnel of the Project
- e. Present conditions of the Equipment provided by the Japanese side
- f. Other related informations

4) Request for taking additional care of machinery and equipment provided by Japan

a. Request for repair of the machinery and equipment provided by Japan and for providing spare parts and consumables.

a) Name of the machinery and equipment needed to be repaired by the Japanese experts. Present condition of the machinery and equipment.

b) Name of the spare parts and the consumables needed to be provided.

c) Other relevant information.

b. Request for supplementary technical cooperation within the scope of R/D

a) Themes within the scope of R/D which need supplementary

technical cooperation by the Japanese short-term experts and the contents of the task of the experts.

- b) Name of the machinery and equipment needed to be provided in order to transfer the technology on the theme.

2. Others

If you have a further request for a new relating project, please prepare a brief paper about it.

3. Questionnaire に対する回答

3-1 「ウ」側レポート

3-2 第三国研修開催に関するプロポーザル

Evaluation Report

on

The Implemented Results and Activities

of

the Pulp and Paper Laboratory

(March 14, 1986 - November 18, 1988)

November 18, 1988

Technological Laboratory of Uruguay
Ministry of Industry and Energy
The Oriental Republic of Uruguay

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1 Introduction

The technical cooperation on the Pulp and Paper Quality Improvement Project (hereinafter referred to as "the Project"), based on the Record of Discussions signed on September 8, 1981 was successfully terminated on March 13, 1986.

In order to analyze the self-reliant operation of the Pulp and Paper Laboratory (hereinafter referred to as "the Laboratory"), the implemented results and activities of the Laboratory since the termination of the Project (March 14, 1986 - November 18, 1988) were carefully confirmed and evaluated by the Technological Laboratory of Uruguay (hereinafter referred to as "LATU").

2 Evaluation Method

As defined in the Record of Discussions signed on September 8, 1981 between the Japanese Implementation Survey Team and the Authorities concerned of the Government of the Oriental Republic of Uruguay, the object of the Project was to transfer the fundamental technology to LATU on the improvement of the quality of pulp and paper by establishing the Laboratory with the following functions and activities in LATU.

- 1) Standardization of the testing methods
- 2) Performance of requested tests from public and private sectors
- 3) Conducting research and development
- 4) Training of Uruguayan personnel
- 5) Information service

Based on the above-mentioned categories, the implementation results and activities results of the Laboratory since the termination of the Project were carefully confirmed and evaluated.

3 Implemented Results and Activities

1) Standardization of the testing methods

The present situation of the standardization of the testing methods and specification is as follows:

Products	Testing Method	Specification
(1) Corrugated boxes		
1) Citrus	-	-
2) Strawberry	-	+
3) Fish	-	-
4) Meat	-	+
5) Tobacco & cigarettes	-	+
6) Cheese and butter	-	+
7) Apples	-	+
8) Peaches	-	+
9) Calaguala	-	+
(2) Sack kraft		
1) Casein	-	+
2) Dry milk	-	+
3) Cement	-	+
4) Lime	-	+
(3) Bill	-	+
(4) Bond paper	-	+

(Remarks)

-: Established

+: Temporary decided

2) Performance of requested tests from public and private sectors

The number of lots tested by the request of public and private sectors from October 1987 to September 1988 are as follows:

Products	unit: lot			
	1987 Oct.-Dec.	1988 Jan.-Mar.	1988 Apr.-Jun.	1988 Jul.-Sep.
(1) Corrugated box				
1) Citrus	22	42	45	54
2) Strawberry	1	-	-	5
3) Fish	8	8	5	8
4) Meat	10	4	4	2
5) Tobacco & Cigarettes	4	4	11	5
6) Cheese and butter	4	-	11	-
7) Detergent	1	4	5	3
8) Alcohol	4	-	-	4
9) Others	14	-	-	-
(2) Sack kraft	3	5	1	19
(3) Bill	2	-	-	-
(4) Bond paper	1	5	1	3
(5) Coated paper	2	-	-	-
(6) Others	25	6	-	-

3) Conducting research and development

Research and development activities of the Laboratory are as follows:

(1) Study on cooking conditions of eucalyptus species

This work is being implemented in cooperation with FNP.

In order to increase the pulp yield from eucalyptus, quinone derivative is added to cooking liquid.

Eucalyptus species are *E. globulus*, *E. maidenii*, *E. viminalis* and *E. grandis*. Laboratory guidance step already finished, trials in industrial plant are being evaluated.

(2) Utilization of waste paper

This work is being implemented in cooperation with CICSSA. Favourable using ratio of old corrugated boards and old sack kraft papers of Brazil and Uruguay is investigated.

(3) Coating of white board

This work is being implemented with IPUSA.

Coating tests by different types of coating color is done on the request of the company.

(4) Waterproof corrugated sheet

Japanese waterproof corrugated sheets were tested in comparison with Uruguayan ones. The formers showed excellent waterproofness. Accordingly Japanese waterproof binder is tested in comparison with Uruguayan ones.

(5) Preliminary test of Synthetic Pulp

Polyethylene synthetic pulp developed in Japan was tested to make a waterproof paperboard in the mixture of wood fiber. Now the properties of this paperboard is being investigated. The knowledge of

synthetic pulp was gained through this work. The interest on this field must be kept and further informations are needed.

(6) Pulping of seed-oil flax

Pulping of seed-oil flax in Uruguay was done and the pulp properties were investigated.

The possibility of export of seed-oil flax to Japan was sounded to Mishima Paper Co., Ltd. According to its opinion, Japanese manufacturers now are using fiber flax 80% and seed-oil flax 20%.

They do not want to use more seed-oil flax, because its property is inferior to the property of fiber flax.

Accordingly this work was terminated. But the non-wood fiber pulping technics was acquired through this work.

4) Training of Uruguayan personnel

The staff of the Laboratory mastered the relevant quality tests, trial makings and treatment of pulp, paper and paperboard.

Especially the waste water analysis methods and procedures were transferred not only to the staff of paper companies but also to other sectors.

5) Information service

The relevant books and literature were provided through the Project and the researchers have a membership of J. TAPPI. Accordingly, the necessary information can be obtained and the information service of LATU for the organization and persons who request it, is provided.

Especially in order to promote the spread of the technology to the domestic and neighbouring countries, the following books are being prepared.

- (1) Pulp and Paper Basic Technology Text Book (in Spanish).
- (2) Corrugated Board Technical Manual (in Spanish).

6) Maintenance of equipment and machinery

All equipment and machinery are kept in good conditions and operated smoothly except the following point:

The sensibility of control of environment test room has been decreased and is not possible to obtain humidities lower than 60% or higher than 85% Hr.

At the time of start up the working range was 35% Hr. - 95% Hr.

7) Preparation of "Small Scale Pulp and Paper Industry Development Seminar"

According to the request of Japanese Embassy in Uruguay LATU analyzed the feasibility of the technical cooperation on pulp and paper to other Latin-American countries, (Annex-I).

As the result, Uruguay is the only country with high degree of self-sufficiency of paper and paperboard in the small scale production countries in Latin-America and its pulp and paper industry structure can be a useful model for small scale production countries and non-production countries aiming to develop their pulp and paper industry. Furthermore, LATU has a well-equipped pulp and paper laboratory and it is playing an important role as the central laboratory of pulp and paper industry as well as the official laboratory in Uruguay.

Accordingly LATU wants to hold the Small Scale Pulp and Paper Industry Development Seminar by the facilities and manpowers of the Laboratory in cooperation with the Uruguayan Paper Association by the JICA Third-Country Training Programme. The objective of the Seminar is to contribute to the development of the pulp and paper industry in other small Latin-American countries.

The technical cooperation proposal towards Small Scale Pulp and Paper Industry Development Seminar was already submitted to the Japanese Government by the Uruguayan Government.

As above mentioned, Pulp and Paper Basic Technology Text Book and Corrugated Board Technical Manual in Spanish are to be used as the text of the Seminar.

8) Guidance of the management on Q&C and R&D by JICA Expert

Ing. Takahito Mikami, (Honorable Technical Advisor of LATU) is assigned to make guidance of the management on Q&C and R&D by JICA from July 4, 1987 to June 29, 1989 on the request of LATU and is contributing to the activities of the Laboratory, with superlative dedication, efficiency and kindness.

9) Staff of the Laboratory

The staff of the Laboratory is as follows:

(1) Chemical Engineer	3
(2) Chemical Assistant	2
(3) Mechanical Technician	1
	—
Total	6

In order to improve the maintenance of equipment and machinery of the Laboratory, LATU wants to send the mechanical technician to Japan to get the training by the relevant manufacturers of equipment and machinery, and submitted the application form of JICA.

10) Situation of using equipment and machinery of the Laboratory by industries

The situation of using equipment and machinery of the Laboratory from October, 1987 to September, 1988 is as follows:

unit: day activity

Name of Company	1987		1988	
	Oct.-Dec.	Jan.-Mar.	Apr.-Jun.	Jul.-Sep.
1 Paper Industry				
FNP	34	10	23	16
CICSSA	63	56	61	108
PAMER	3	5	2	3
IPUSA	1	-	2	3
Total	101	71	88	130
2 Printing Industry, etc.				
IUC	-	-	3	5
BR	-	-	2	1
PUMA	-	-	-	12
Total	-	-	5	18
Grand Total	101	71	93	148

The photographs of their activities are attached in Annex-2.

4 Evaluation of the self-reliant operation of the Laboratory

Accordingly to the implemented results and activities of the Laboratory as above-mentioned, it is sure that the Laboratory is performing the self-reliant operation as the center of pulp and paper technology in Uruguay.

Furthermore LATU has the intention to contribute to the development of the pulp and paper industry in other small Latin-American countries through the Small Scale Pulp and Paper Industry Development Seminar.

5 Conclusion

As a result, it can be confirmed that the implementation results and activities of the Laboratory since the termination of the Project are quite satisfactory.

6 Acknowledgement

LATU expresses the sincere gratitude to the Japanese Government, the Japanese Embassy in Montevideo and JICA for the useful and kind cooperation.

Furthermore, LATU hopes to keep the close relation with JICA from now on.

3 - 2 第三国研修開催に関するプロポーザル

(Annex - I)

Feasibility Analysis of The Technical Cooperation
on Pulp and Paper
to other Latin - American Countries

December, 1987

Technological Laboratory of Uruguay

Summary

The consumption of paper and paperboard increases with the growth rate of Gross Domestic Product (GDP) of a country.

Accordingly, the development of pulp and paper industry is one of the projects with highest priority in the strategy of national economic development of developing countries with high growth rate of GDP.

Uruguayan Government established a well-equipped pulp and paper section in the Technological Laboratory of Uruguay (LATU) in cooperation with Japanese Government to assist the development of the pulp and paper industry in the country and it is playing an important role.

Therefore, LATU analyzed the feasibility of the technical cooperation on pulp and paper to other Latin-American countries. As the result, Uruguay is the only country with high degree of self-sufficiency of paper and paperboard in the small scale production countries in Latin America and its pulp and paper industry structure can be a useful model for small scale production countries and non-production countries aiming to develop their pulp and paper industry.

Furthermore, as above mentioned, LATU has a well-equipped pulp and paper section and the following feasibility of technical cooperation has been recognized.

1. Name of seminar

Small Scale Pulp and Paper Industry Development Seminar

2. Countries with the possibility of technical cooperation

(1) Small scale production countries (8 countries)

Paraguay, Panama, El Salvador, Jamaica, Guatemala, Ecuador,
Dominican RP, Costa Rica

(2) Non-production countries (5 countries)

Honduras, Trinidad Tob., Bolivia, Suriname, Martinique

3. Scope of cooperation

(1) Paper and paperboard except newsprint (printing and writing
paper, packaging paper and paperboard, tissue paper)

(2) Pulp

4. Objectives

(1) Increase of the degree of self-sufficiency of paper and paper-
board (expansion of product)

(2) Improvement of the quality of paper and paperboard

5. Effects

- (1) Substitution of imports
- (2) Saving of foreign currency
- (3) Expansion of employment
- (4) Regional development
- (5) Improvement of the relation between producers and consumers
- (6) Promotion of education

6. Implementation system

LATU will implement the seminar in cooperation with the Uruguayan Paper Association.

(1) LATU

Equipment: 1) Bench plant of pulping, paper-making and coating processes

2) Testers of paper, paperboard and corrugated boxes

Staffs : 1) 3 researches

2) 2 technical assistants

3) 1 mechanician

(2) Paper Association

Paper producers: 5 companies

7. Implementation method

It is desirable to apply the JICA Third-Country Training Programme.

8. Schedule of seminar

The duration of the seminar will be twenty days including laboratory activities, mill visits, lectures and discussions.

Accordingly, based on the above mentioned possibility, it is necessary to study an implementation plan.

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I Introduction

Paper and paperboard are commodities with functions of communication, packaging, sanitation, etc., and play an important role as a medium to support the living, social, political, cultural and industrial activities.

Accordingly, pulp and paper industry is one of the most important industries in a country.

On the other hand the consumption of paper and paperboard increases with the growth rate of Gross Domestic Production (GDP) and it is expected that the consumption will increase continuously in developing countries with high growth rate of GDP.

In this meaning, the development of pulp and paper industry in developing countries is one of the projects with highest priority in the strategy of national economic development.

Also, pulp and paper project is an important theme in international cooperation to help the industry development in developing countries.

Uruguayan Government established a pulp and paper section in the Technological Laboratory of Uruguay (LATU) in cooperation with Japanese Government to assist the development of the pulp and paper industry in the country.

It is playing an important role not only as the official laboratory but also as the central laboratory of the industry.

Therefore LATU analyzed the feasibility of the technical cooperation on pulp and paper to other Latin-American countries, based on the data of Forest Products World Outlook Projections 1985 - 2000 by FAO and the results are described in this paper.

II Projection of Paper, Paperboard and Pulp Consumptions in the world

The paper and paperboard consumption in 1984 and its projection in 1995 by region in the world are shown in Table - 1.

Comparing with the consumption in 1984, its projection in 1995 has an increase rate of 36% in the world total, 22% in developed countries and 84% in developing countries. The increase rate in Latin America is 75%, two times of the world and 3.4 times of developed countries. The largest increase is expected in this region.

On the other hand, the pulp consumption in 1984 and its projection in 1995 by region in the world are shown in Table - 2.

Comparing with the consumption in 1984, its projection in 1995 has an increase rate of 29% in the world total, 25% in developed countries and 31% in developing countries. The increase rate in Latin America is 44%, the largest in developing countries, 1.5 time of the world total and 1.7 time of developed countries.

Table - 1

Paper and Paperboard Consumption in 1984 and its projection in 1995

	1984 (1.000 t)	1995 (1.000 t)	Increase Rate (%)
World	187.317	254.801	36
Developed Market Economies	144.410	177.157	22
North America	73.402	82.612	12
West Europe	46.762	58.998	26
Oceania	2.575	3.289	27
Others	21.671	32.259	48
Developing Market Economies	20.103	37.027	84
Africa	855	1.482	73
Latin America	9.713	17.087	75
Near East-Africa	472	957	102
Near East-Asia	1.304	2.225	70
Far East	7.738	15.242	96
Others	20	34	70
Centrally Planned Economies	22.804	40.616	78
Asia	7.508	16.210	115
Europe & USSR	15.296	24.406	59

Table - 2

Pulp Consumption in 1984 and its projection in 1995

	1984 (1,000 t)	1995 (1,000 t)	Increase Rate (%)
World	139.577	181.162	29
Developed Market Economies	109.985	138.545	25
North America	64.376	76.535	18
West Europe	32.204	40.825	26
Oceania	1.759	2.095	19
Others	11.646	19.091	63
Developing Market Economies	10.802	14.159	31
Africa	349	458	31
Latin America	5.456	7.904	44
Near East-Africa	131	170	29
Near East-Asia	637	771	21
Far East	4.229	4.856	14
Centrally Planned Economies	18.791	28.457	51
Asia	5.841	9.788	67
Europe & USSR	12.950	18.669	44

III Projection of Paper and Paperboard Consumption in Latin America Total

The newsprint, printing and writing paper, and other paper and paperboard consumptions in Latin America total in 1984 and their projections in 1995 are shown in Table - 3.

As seen in this table, the increase rates of printing and writing paper, other paper and paperboard, and newsprint are 91%, 74% and 60% respectively. Printing and writing paper has the highest increase rate and newsprint has the lowest one.

Table - 3

Newsprint, Printing and Writing Paper, and other Paper and Paperboard consumptions in 1984 and their projections in 1995

	1984 (1.000 t)	1995 (1.000 t)	Increase Rate (%)
Newsprint	1.274	2.049	60
Printing and Writing Paper	2.069	3.954	91
Other Paper and Paperboard	6.370	11.084	74
Total	9.713	17.087	75

IV Projection of Paper, Paperboard and Pulp Consumptions in Latin-American Countries

Newsprint, printing and writing paper, other paper and paperboard, paper and paperboard total, and pulp consumptions in 1984 and their projections in 1995 are shown in Table - 4, 5, 6, 7 and 8 respectively.

From Table - 2 and 3, their increase rates are as follows:

Newsprint	:	60%
Printing and writing paper:		91%
Other paper and paperboard:		74%
Paper and paperboard total:		75%
Pulp	:	44%

Table - 4

Newsprint consumption in 1984 and its projection in 1995

Country	1984 (1.000 t)	1995 (1.000 t)	Increase Rate (%)
Argentina	223	292	30
Bahamas	1	5	400
Barbados	2	3	50
Bolivia	7	11	57
Brazil	270	520	92
Chile	60	94	56
Colombia	78	150	92
Costa Rica	10	18	80
Cuba	39	60	53
Dominican RP	14	21	50
Ecuador	32	51	59
El Salvador	13	23	76
Guatemala	13	27	107
Guyana	1	2	100
Honduras	5	9	80
Jamaica	4	7	75
Mexico	266	381	43
Neth Antille	2	2	0
Nicaragua	4	6	50
Panama	6	7	16
Paraguay	6	12	100
Peru	48	87	81
Trinidad Tob.	10	15	50
Uruguay	9	19	111
Venezuela	156	227	45

Table - 5

Printing and Writing Paper Consumption in 1984 and its projection
in 1995

Country	1984 (1.000 t)	1995 (1.000 t)	Increase Rate (%)
Argentina	208	311	49
Barbados	2	4	100
Bolivia	6	12	100
Brazil	787	1.755	122
Chile	74	102	37
Colombia	76	178	134
Costa Rica	7	17	142
Cuba	49	99	102
Dominican RP	28	50	78
Ecuador	34	50	47
Guatemala	24	49	104
Honduras	1	7	600
Jamaica	7	12	71
Mexico	559	937	67
Neth Antille	1	2	100
Nicaragua	4	6	50
Panama	19	20	5
Paraguay	6	13	116
Peru	39	105	169
Suriname	2	6	200
Trinidad Tob.	4	9	125
Uruguay	11	28	154
Venezuela	121	181	49

Table - 6

Other Paper and Paperboard Consumption in 1984 and Its Projection
in 1995

Country	1984 (1.000 t)	1995 (1.000 t)	Increase Rate (%)
Argentina	600	752	25
Barbados	4	9	125
Bolivia	6	10	66
Brazil	2.224	4.539	104
Belize	1	2	100
Chile	164	225	37
Colombia	293	569	94
Costa Rica	113	312	176
Cuba	192	304	58
Dominican RP	33	52	57
Ecuador	115	163	41
El Salvador	39	76	94
Guadeloupe	10	17	70
Guatemala	44	132	200
Guyana	4	8	100
Haiti	5	7	40
Honduras	43	76	76
Jamaica	47	57	21
Martinique	15	29	93
Mexico	1.651	2.428	47
Neth Antille	2	4	100
Nicaragua	6	10	66
Panama	100	142	42
Paraguay	14	30	114
Peru	98	230	134
Suriname	11	41	272
Trinidad Tob.	24	66	175
Uruguay	29	39	34
Venezuela	487	752	54

Table - 7

Paper and Paperboard Total Consumption in 1984 and Its Projection
in 1995

Country	1984 (1.000 t)	1995 (1.000 t)	Increase Rate (%)
Argentina	1.031	1.354	31
Bahamas	1	5	400
Barbados	7	16	128
Bolivia	18	34	88
Brazil	3.281	6.814	107
Belize	1	2	100
Chile	298	422	42
Colombia	447	897	100
Costa Rica	130	348	167
Cuba	280	463	65
Dominican RP	75	124	65
Ecuador	181	263	45
El Salvador	51	99	94
Guadeloupe	10	17	70
Guatemala	81	208	156
Guyana	5	10	100
Haiti	5	7	40
Honduras	48	92	91
Jamaica	58	76	31
Martinique	15	29	93
Mexico	2.476	3.746	51
Neth Antille	5	9	80
Nicaragua	13	21	61
Panama	124	169	36
Paraguay	26	54	107
Peru	185	422	128
Suriname	13	47	261
Trinidad Tob.	38	91	139
Uruguay	48	86	79
Venezuela	763	1.160	52

Table - 8

Pulp Consumption in 1984 and Its Projection in 1995

Country	1984 (1,000 t)	1995 (1,000 t)	Increase Rate (%)
Argentina	693	823	18
Brazil	2,595	4,157	60
Chile	346	372	7
Colombia	235	393	67
Costa Rica	5	17	240
Cuba	80	125	56
Dominican RP	4	5	25
Ecuador	31	46	48
Guatemala	8	32	300
Mexico	970	1,236	27
Panama	2	2	0
Peru	100	138	88
Uruguay	35	39	11
Venezuela	353	470	33

V Production of Paper and Paperboard in Latin-American Countries

1 Production

Newsprint, printing and writing paper, other paper and paperboard, paper and paperboard total productions in Latin-American countries in 1984 are shown in Table - 9.

2 Degree of self-sufficiency

The degree of self-sufficiency of each country in 1984 was calculated by the following formula from the data in Table 7 and 9.

$$\text{Degree of self-sufficiency} = \frac{\text{Production}}{\text{Consumption}} \times 100\%$$

The Results are shown in Table - 10.

Table - 9

Paper and Paperboard production in 1984

	Newsprint	Printing & Writing	(1.000 t) Other Paper & Paperboard	Total
Argentina	204	185	557	946
Brazil	109	1.075	2.584	3.768
Chile	170	61	144	375
Colombia	-	67	299	366
Costa Rica	-	-	14	14
Cuba	-	34	75	109
Dominican RP	-	-	9	9
Ecuador	-	5	29	34
El Salvador	-	-	16	16
Guatemala	-	11	6	17
Jamaica	-	-	18	18
Mexico	199	461	1.531	2.191
Panama	-	5	38	43
Paraguay	-	2	11	13
Peru	10	37	99	146
Uruguay	-	18	29	47
Venezuela	-	113	444	557

Table - 10

Degree of Self-sufficiency in Each Country in 1984

	Production (1,000 t)	Consumption (1,000 t)	Degree of Self- sufficiency (%)
Argentina	946	1,031	91
Bahamas	-	1	0
Barbados	-	7	0
Bolivia	-	18	0
Brazil	3,768	3,281	114
Belize	-	1	0
Chile	375	298	125
Colombia	366	447	81
Costa Rica	14	130	11
Cuba	109	280	38
Dominica RP	9	75	12
Ecuador	34	181	18
El Salvador	16	5	31
Guadeloupe	-	10	0
Guatemala	17	81	20
Guyana	-	5	0
Haiti	-	5	0
Honduras	-	48	0
Jamaica	18	58	31
Martinique	-	15	0
Mexico	2,191	2,476	88
Neth Antille	-	5	0
Nicaragua	-	13	0
Panama	43	124	34
Paraguay	13	26	50
Peru	146	185	78
Suriname	-	13	0
Trinidad Tob.	-	38	0
Uruguay	47	48	97
Venezuela	557	763	73

VI Classification of Latin-American Countries by their Pulp and Paper Industry Structure

The classification factors of pulp and paper industry structure are as follows:

1 Production scale

- (1) Large scale production : more than 1.000.000 t/y
- (2) Medium scale production: 100.000 - 1.000.000 t/y
- (3) Small scale production : less than 100.000 t/y

2 Degree of self-sufficiency

- (1) Super - high degree: more than 100%
- (2) High degree : 100 - 75%
- (3) Medium degree : 75 - 50%
- (4) Low degree : 50 - 10%
- (5) Non-production : less than 10%

3 Newsprint

- (1) Production
- (2) Non-production

Based on the above mentioned factors, the classification of Latin-American countries is shown in Table - 11.

Large scale production countries

There are two large scale production countries and their degree of self-sufficiency is more than 75% and both countries produce newsprint.

. Medium scale production countries

There are six medium scale production countries and their degree of self-sufficiency is more than 75% except Cuba and Venezuela and three countries of them produce newsprint.

. Small scale production countries

There are nine small scale production countries and their degree of self-sufficiency is less than 50% except Uruguay and all of them do not produce newsprint.

. Non-production countries

There are thirteen non-production countries and five countries of them have a projected consumption of more than 25,000 t/y in 1995.

Therefore, Uruguay is the only country with high degree of self-sufficiency in the small scale production countries in Latin-America and its pulp and paper industry structure can be a useful model for the small scale production countries and non-production countries aiming to develop their pulp and paper industry.

Table - 11

Classification of the Latin-American Countries by Pulp and Paper

Degree of Self-sufficiency Production	Industry Structure				
	less than 10%	10 - 50%	50 - 75%	75 - 100%	more than 100%
(I) Large Scale more than 1.000.000 t/y				* Mexico	* Brazil
(II) Medium Scale 100.000 - 1.000.000 t/y		Cuba	Venezuela	* Argentina * Colombia * Peru	* Chile
(III) Small Scale less than 100.000 t/y		Paraguay Panama El Salvador Jamaica Guatemala Ecuador Dominica RP Costa Rica		Uruguay	
(IV) Non-production	Honduras Trinidad Tob. Bolivia Martinique Nicaragua Suriname Guadeloupe Barbados Guyana Haiti Neth Antille Bahamas Belize				

(Remarks) * : Newsprint production country

VII Feasibility of the Technical Cooperation to Latin-American Countries by the Technological Laboratory of Uruguay

As above mentioned, Uruguay is the only country with high degree of self-sufficiency in the small scale production countries and furthermore LATU has a well-equipped pulp and paper laboratory. Accordingly the following feasibility of the technical cooperation has been recognized

1 Name of seminar

Small Scale Pulp and Paper Industry Development Seminar

2 Countries with the possibility of technical cooperation

(1) Small scale production countries (8 countries)

Paraguay, Panama, El Salvador, Jamaica, Guatemala, Ecuador, Dominican RP, Costa Rica.

(2) Non-production countries (5 countries)

Honduras, Trinidad Tob., Bolivia, Suriname and Martinique of the thirteen non-production countries have a projected consumption of more than 25.000 t/y in 1995.

3 Scope of cooperation

(1) Paper and paperboard except newsprint (printing and writing paper, packaging paper and paperboard, tissue paper).

(2) Pulp

4 Objectives

(1) Increase of the degree of self-sufficiency of paper and paperboard (expansion of production)

(2) Improvement of the quality of paper and paperboard

5 Effects

- (1) Substitution of imports
- (2) Saving of foreign currency
- (3) Expansion of employment
- (4) Regional development
- (5) Improvement of the relation between producers and consumers
- (6) Promotion of education

6 Implementation system

LATU will implement the seminar in cooperation with the Uruguayan Paper Association.

(1) LATU

LATU has the following equipment and personnel:
(refer to the attached pamphlet)

1) Equipment

1. Bench plant of pulping, paper-making and coating processes
2. Testers of physical and optical properties of paper and paperboard
3. Printability tester
4. Corrugated box testers

2) Staffs

1. 3 researchers
2. 2 technical assistants
3. 1 mechanician

(2) Paper Association

There are five paper companies in the Paper Association:

1) FNP

Daily output capacity: pulp 100 t/d
paper and paperboard 155 t/d

Products : Printing and writing paper, packaging paper

2) PAMER

Daily output capacity: pulp 25 t/d
paper and paperboard 85 t/d

Products : Corrugated board and box, packaging paper, Printing and Writing paper, tissue paper

3) IPUSA

Daily output capacity: pulp 4 t/d
paper and paperboard 58 t/d

Products : Carton board, packaging paper, tissue paper, Printing and Writing paper, notebook, napkin, etc.

4) CICSSA

Daily output capacity: paper and paperboard 50 t/d

Products : Corrugated board and box, packaging paper

5) CP

Daily output capacity: paper and paperboard 22 t/d

Products : Carton board, packaging paper, Printing and Writing paper

7 Implementation method

It is desirable to apply the JICA Third - Country Training Programme.

8 Schedule of seminar

The schedule of seminar is shown in Table - 12.

Table - 12

Schedule of Seminar

	Date	Performance
Part - 1: Laboratory activities	1 (Mon)	Arrival
	2 (Tue)	Opening Ceremony (speeches by President of LATU, delegate of Paper Association, etc.) tour in LATU
	3 (Wed)	Pulping
	4 (Thu)	Paper-making
	5 (Fri)	Coating
	6 (Sat)	Holiday
	7 (Sun)	as above
	8 (Mon)	Quality control of pulp and paper
	9 (Tue)	Quality control of paperboard and corrugated box
Part - 2: Mill visits	10 (Wed)	Explanation of the five paper companies
	11 (Thu)	Visit to FNP
	12 (Fri)	Visit to PAMER
	13 (Sat)	Holiday
	14 (Sun)	as above
	15 (Mon)	Visit to IPUSA, CICSSA and PC

Part - 3: Lectures and Discussions	16 (Tue)	Raw materials of fiber for paper-making and production of paper and paperboard *
	17 (Wed)	History, actual situation and perspective of forestation in Uruguay **
	18 (Thu)	Development plan and technical cooperation *
	19 (Fri)	Closing ceremony
	20 (Sat)	Departure

(Remarks)

* : Japanese speakers assigned by JICA

** : Speakers invited from Forestry Department of Uruguay

VIII Conclusion

As above mentioned, the feasibility of the technical cooperation on pulp and paper to Latin-American countries has been recognized. Therefore it is necessary to study the implementation plan.

4. 「ウ」国紙パルプ業界5社の売り上げ量の推移

4-1 FNP

4-2 PAMER

4-3 IPUSA

4-4 CICSSA

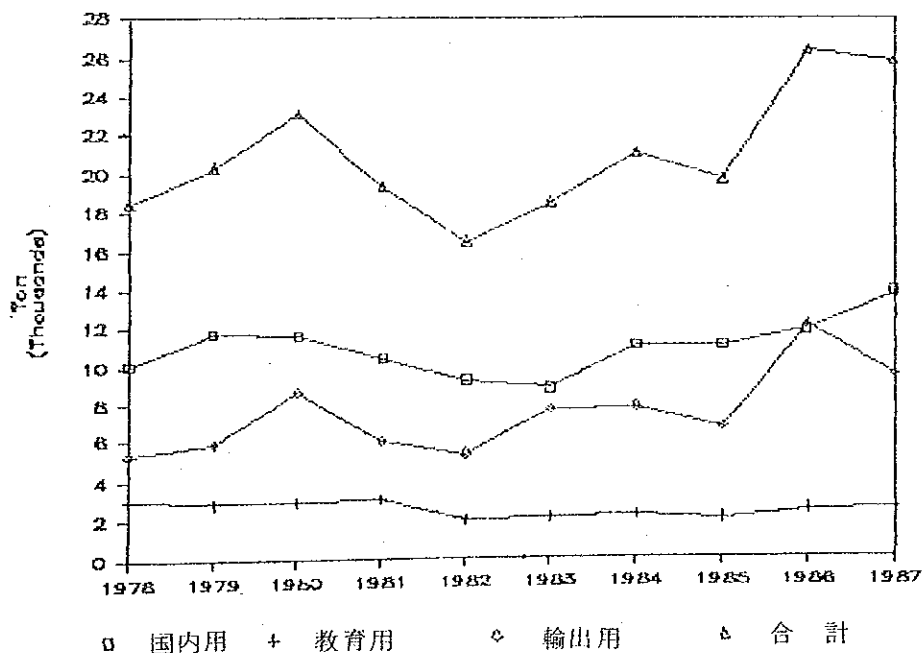
4-5 CP

4-1 FABRICA NACIONAL DE PAPEL S.A.(F.N.P.)

	印刷・筆記用				包装用				合計			
	国内用	教育用	輸出用	合計	国内用	教育用	輸出用	合計	国内用	教育用	輸出用	合計
	1978	7868.0	2874.1	5209.3	15951.4	2253.7	121.0	107.0	2481.7	10121.7	2995.1	5316.3
1979	9698.3	2808.2	5808.9	18315.4	1983.3	50.8	8.0	2042.1	11681.6	2859.0	5816.9	20357.5
1980	9371.9	2811.6	8619.9	20803.4	2221.0	60.3	67.8	2349.1	11592.9	2871.9	8687.7	23152.5
1981	8059.1	2964.4	5922.3	16945.8	2319.0	75.5	0.0	2394.5	10378.1	3039.9	5922.3	19340.3
1982	7585.5	1851.6	5230.6	14677.7	1681.5	79.2	0.0	1760.7	9267.0	1940.8	5230.6	16438.4
1983	7388.1	1943.6	7604.0	16935.7	1447.7	77.4	51.3	1576.4	8835.8	2021.0	7655.3	18512.1
1984	9263.5	2074.0	7807.1	19144.6	1799.1	76.5	40.0	1915.6	11062.6	2150.5	7847.1	21060.2
1985	9231.0	1872.0	6532.0	17635.0	1825.0	92.0	180.0	2097.0	11056.0	1964.0	6712.0	19732.0
1986	9918.6	2332.7	11456.4	23707.7	1973.7	68.9	687.1	2729.7	11892.3	2401.6	12143.5	26437.4
1987	11713.0	2344.0	9396.0	23453.0	2119.0	174.0	143.0	2436.0	13932.0	2518.0	9539.0	25889.0

構成比

	印刷・筆記用				包装用				合計			
	国内用	教育用	輸出用	合計	国内用	教育用	輸出用	合計	国内用	教育用	輸出用	合計
	1978	49.3	18.0	32.7	100.0	90.8	4.9	4.3	100.0	54.9	16.2	28.8
1979	53.0	15.3	31.7	100.0	97.1	2.5	0.4	100.0	57.4	14.0	28.6	100.0
1980	45.0	13.5	41.4	100.0	94.5	2.6	2.9	100.0	50.1	12.4	37.5	100.0
1981	47.6	17.5	34.9	100.0	96.8	3.2	0.0	100.0	53.7	15.7	30.6	100.0
1982	51.7	12.7	35.6	100.0	95.5	4.5	0.0	100.0	56.4	11.8	31.8	100.0
1983	43.6	11.5	44.9	100.0	91.8	4.9	3.3	100.0	47.7	10.9	41.4	100.0
1984	48.4	10.8	40.8	100.0	93.9	4.0	2.1	100.0	52.5	10.2	37.3	100.0
1985	52.3	10.6	37.0	100.0	87.0	4.4	8.6	100.0	56.0	10.0	34.0	100.0
1986	41.8	9.8	48.3	100.0	72.3	2.5	25.2	100.0	45.0	9.1	45.9	100.0
1987	49.9	10.0	40.1	100.0	87.0	7.1	5.9	100.0	53.4	9.7	36.8	100.0

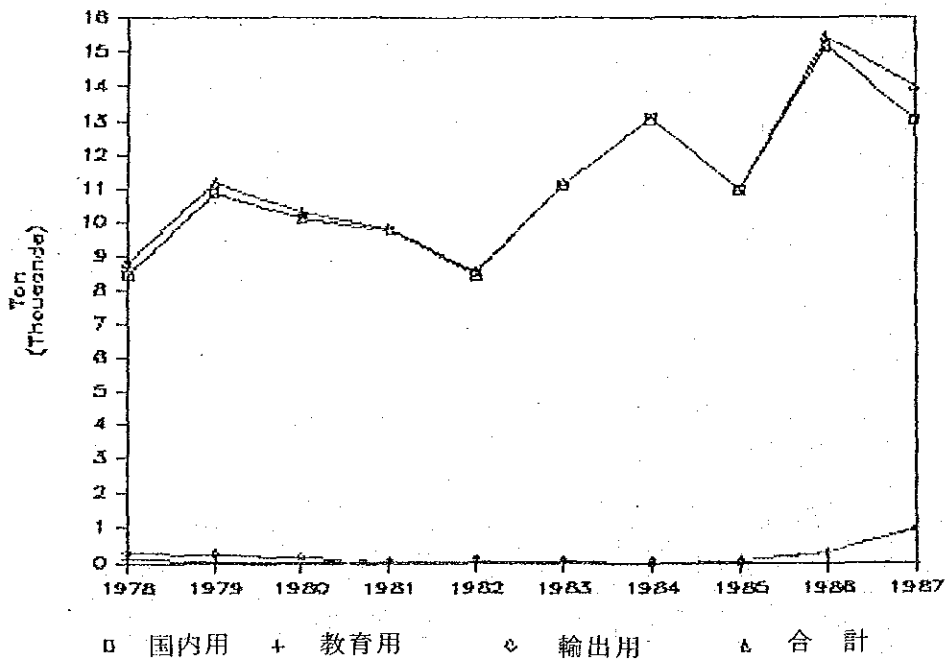


4-2 PAPELERA MERCEDES S.A. (PAMER)

	印刷・筆記用				包装用				合計			
	国内用	教育用	輸出用	合計	国内用	教育用	輸出用	合計	国内用	教育用	輸出用	合計
1978	660.0	89.0	-	749.0	7789.0	-	270.0	8059.0	8449.0	89.0	270.0	8808.0
1979	995.0	61.0	-	1056.0	9882.3	-	248.7	10131.0	10277.3	61.0	248.7	11187.0
1980	768.0	14.0	-	782.0	9362.0	-	150.0	9512.0	10130.0	14.0	150.0	10294.0
1981	621.0	6.0	-	627.0	9127.0	-	30.0	9157.0	9748.0	6.0	30.0	9784.0
1982	462.0	15.0	-	477.0	8013.0	-	60.0	8073.0	8475.0	15.0	60.0	8550.0
1983	218.0	5.0	-	223.0	10873.0	-	40.0	10913.0	11091.0	5.0	40.0	11136.0
1984	321.0	4.0	-	325.0	12747.0	-	0.0	12747.0	13068.0	4.0	0.0	13072.0
1985	276.0	4.0	-	280.0	10700.0	-	22.0	10722.0	10976.0	4.0	22.0	11002.0
1986	183.0	0.0	-	183.0	15006.0	-	284.0	15290.0	15189.0	0.0	284.0	15473.0
1987	240.0	0.1	-	240.1	12784.0	-	992.0	13776.0	13024.0	0.1	992.0	14016.1

構成比

	印刷・筆記用				包装用				合計			
	国内用	教育用	輸出用	合計	国内用	教育用	輸出用	合計	国内用	教育用	輸出用	合計
1978	88.1	11.9	0.0	100.0	96.6	0.0	3.4	100.0	95.9	1.0	3.1	100.0
1979	94.2	5.8	0.0	100.0	97.5	0.0	2.5	100.0	97.2	0.5	2.2	100.0
1980	98.2	1.8	0.0	100.0	98.4	0.0	1.6	100.0	98.4	0.1	1.5	100.0
1981	99.0	1.0	0.0	100.0	99.7	0.0	0.3	100.0	99.6	0.1	0.3	100.0
1982	96.9	3.1	0.0	100.0	99.3	0.0	0.7	100.0	99.1	0.2	0.7	100.0
1983	97.8	2.2	0.0	100.0	99.6	0.0	0.4	100.0	99.6	.0	0.4	100.0
1984	98.8	1.2	0.0	100.0	100.0	0.0	0.0	100.0	100.0	.0	0.0	100.0
1985	98.6	1.4	0.0	100.0	99.8	0.0	0.2	100.0	99.8	.0	0.2	100.0
1986	100.0	0.0	0.0	100.0	98.1	0.0	1.9	100.0	98.2	0.0	1.8	100.0
1987	100.0	.0	0.0	100.0	92.8	0.0	7.2	100.0	92.9	.0	7.1	100.0

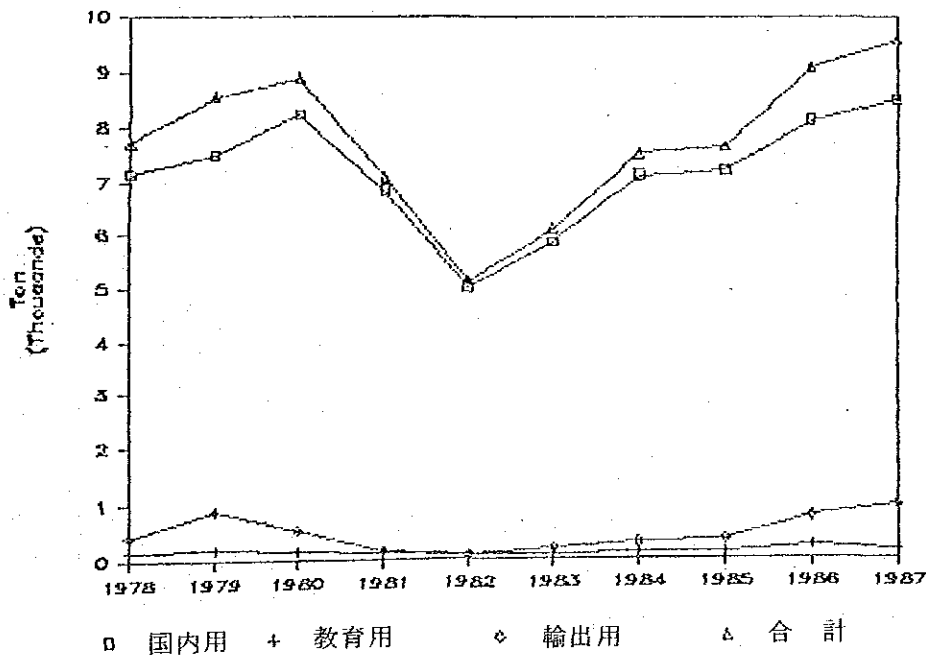


4-3 INDUSTRIA PAPELERA URUGUAYA S.A.(IPUSA)

	印刷・筆記用				包装用				合計			
	国内用	教育用	輸出用	合計	国内用	教育用	輸出用	合計	国内用	教育用	輸出用	合計
1978	3762.5	153.5	227.7	4143.7	3374.7	-	184.7	3559.4	7137.2	153.5	412.4	7703.1
1979	3867.7	185.6	737.8	4791.1	3629.2	-	134.9	3764.1	7496.9	185.6	872.7	8555.2
1980	2944.0	140.4	369.0	3453.4	5281.0	-	171.0	5452.0	8225.0	140.4	540.0	8905.4
1981	2039.0	111.5	105.0	2255.5	4804.0	-	23.0	4827.0	6843.0	111.5	128.0	7082.5
1982	1412.0	66.0	40.0	1518.0	3581.0	-	29.0	3610.0	4993.0	66.0	69.0	5128.0
1983	2493.0	73.0	85.0	2651.0	3359.0	-	95.0	3454.0	5852.0	73.0	180.0	6105.0
1984	2928.0	114.0	80.0	3122.0	4191.0	-	200.0	4391.0	7119.0	114.0	280.0	7513.0
1985	3056.0	99.0	140.0	3295.0	4155.0	-	200.0	4355.0	7211.0	99.0	340.0	7650.0
1986	3336.0	207.0	357.0	3900.0	4793.0	-	390.0	5183.0	8129.0	207.0	747.0	9083.0
1987	3424.0	126.0	613.0	4163.0	5087.0	-	333.0	5420.0	8511.0	126.0	946.0	9583.0

構成比

	印刷・筆記用				包装用				合計			
	国内用	教育用	輸出用	合計	国内用	教育用	輸出用	合計	国内用	教育用	輸出用	合計
1978	90.8	3.7	5.5	100.0	94.8	0.0	5.2	100.0	92.7	2.0	5.4	100.0
1979	80.7	3.9	15.4	100.0	96.4	0.0	3.6	100.0	87.6	2.2	10.2	100.0
1980	85.2	4.1	10.7	100.0	96.9	0.0	3.1	100.0	92.4	1.6	6.1	100.0
1981	90.4	4.9	4.7	100.0	99.5	0.0	0.5	100.0	96.6	1.6	1.8	100.0
1982	93.0	4.3	2.6	100.0	99.2	0.0	0.8	100.0	97.4	1.3	1.3	100.0
1983	94.0	2.8	3.2	100.0	97.2	0.0	2.8	100.0	95.9	1.2	2.9	100.0
1984	93.8	3.7	2.6	100.0	95.4	0.0	4.6	100.0	94.8	1.5	3.7	100.0
1985	92.7	3.0	4.2	100.0	95.4	0.0	4.6	100.0	94.3	1.3	4.4	100.0
1986	85.5	5.3	9.2	100.0	92.5	0.0	7.5	100.0	89.5	2.3	8.2	100.0
1987	82.2	3.0	14.7	100.0	93.9	0.0	6.1	100.0	88.8	1.3	9.9	100.0

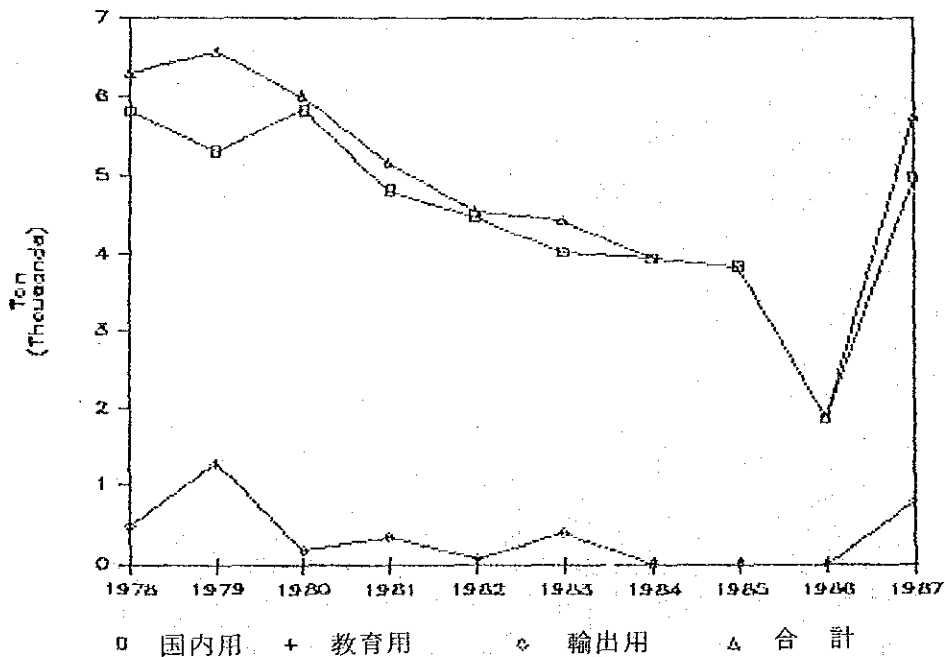


4-4 COMPANIA INDUSTRIAL Y COMERCIAL DEL
SUR S.A.(CICSSA)

	印刷・筆記用				包装用				合計			
	国内用	教育用	輸出用	合計	国内用	教育用	輸出用	合計	国内用	教育用	輸出用	合計
1978	425.1	-	164.9	590.0	5396.7	-	317.3	5714.0	5821.8	0.0	482.2	6304.0
1979	268.0	-	49.0	317.0	5042.0	-	1223.0	6265.0	5310.0	0.0	1272.0	6582.0
1980	0.0	-	80.0	80.0	5830.0	-	108.0	5938.0	5830.0	0.0	188.0	6018.0
1981	27.0	-	-	27.0	4789.0	-	349.0	5138.0	4815.0	0.0	349.0	5165.0
1982	140.0	-	50.0	190.0	4352.0	-	21.0	4373.0	4492.0	0.0	71.0	4563.0
1983	150.0	-	150.0	300.0	3900.0	-	252.0	4152.0	4050.0	0.0	402.0	4452.0
1984	210.2	-	-	210.2	3751.7	-	-	3751.7	3961.9	0.0	0.0	3961.9
1985	12.0	-	-	12.0	3854.0	-	-	3854.0	3866.0	0.0	0.0	3866.0
1986	0.0	-	-	0.0	1898.7	-	-	1898.7	1898.7	0.0	0.0	1898.7
1987	0.0	-	-	0.0	4999.0	-	776.0	5775.0	4999.0	0.0	776.0	5775.0

構成比

	印刷・筆記用				包装用				合計			
	国内用	教育用	輸出用	合計	国内用	教育用	輸出用	合計	国内用	教育用	輸出用	合計
1978	72.1	0.0	27.9	100.0	94.4	0.0	5.6	100.0	92.4	0.0	7.6	100.0
1979	84.5	0.0	15.5	100.0	80.5	0.0	19.5	100.0	80.7	0.0	19.3	100.0
1980	0.0	0.0	100.0	100.0	98.2	0.0	1.8	100.0	96.9	0.0	3.1	100.0
1981	100.0	0.0	0.0	100.0	93.2	0.0	6.8	100.0	93.2	0.0	6.8	100.0
1982	73.7	0.0	26.3	100.0	93.5	0.0	0.5	100.0	98.4	0.0	1.5	100.0
1983	50.0	0.0	50.0	100.0	93.9	0.0	6.1	100.0	91.0	0.0	9.0	100.0
1984	100.0	0.0	0.0	100.0	100.0	0.0	0.0	100.0	100.0	0.0	0.0	100.0
1985	100.0	0.0	0.0	100.0	100.0	0.0	0.0	100.0	100.0	0.0	0.0	100.0
1986	-	-	-	-	100.0	0.0	0.0	100.0	100.0	0.0	0.0	100.0
1987	-	-	-	-	85.6	0.0	13.4	100.0	85.6	0.0	13.4	100.0

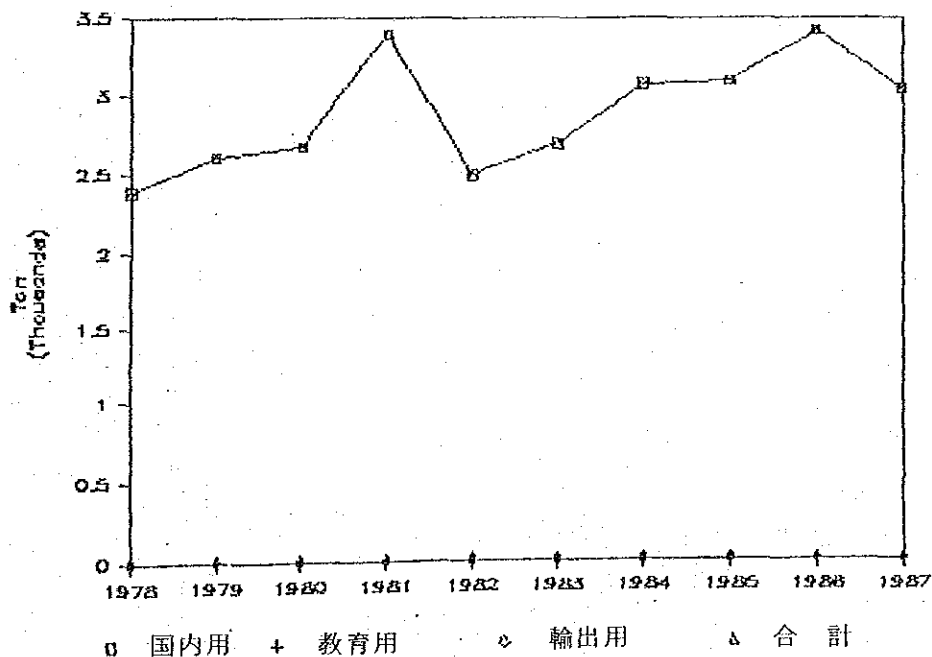


4-5 CARTONERA Y PAPELERA PANDO S.A.(CP)

	印刷・筆記用				包装用				合計			
	国内用	教育用	輸出用	合計	国内用	教育用	輸出用	合計	国内用	教育用	輸出用	合計
1978	815.0	-	-	815.0	1568.0	-	-	1568.0	2383.0	0.0	0.0	2383.0
1979	863.8	-	-	863.8	1746.7	-	-	1746.7	2610.5	0.0	0.0	2610.5
1980	608.0	-	-	608.0	2064.8	-	-	2064.8	2672.8	0.0	0.0	2672.8
1981	535.1	-	-	535.1	2861.0	-	-	2861.0	3396.1	0.0	0.0	3396.1
1982	274.7	-	-	274.7	2219.5	-	-	2219.5	2494.2	0.0	0.0	2494.2
1983	429.0	-	-	429.0	2268.0	-	-	2268.0	2697.0	0.0	0.0	2697.0
1984	577.0	-	-	577.0	2498.0	-	-	2498.0	3075.0	0.0	0.0	3075.0
1985	544.0	-	-	544.0	2550.0	-	-	2550.0	3094.0	0.0	0.0	3094.0
1986	742.0	-	-	742.0	2680.0	-	-	2680.0	3422.0	0.0	0.0	3422.0
1987	686.0	-	-	686.0	2354.0	-	-	2354.0	3040.0	0.0	0.0	3040.0

構成比

	印刷・筆記用				包装用				合計			
	国内用	教育用	輸出用	合計	国内用	教育用	輸出用	合計	国内用	教育用	輸出用	合計
1978	100.0	0.0	0.0	100.0	100.0	0.0	0.0	100.0	100.0	0.0	0.0	100.0
1979	100.0	0.0	0.0	100.0	100.0	0.0	0.0	100.0	100.0	0.0	0.0	100.0
1980	100.0	0.0	0.0	100.0	100.0	0.0	0.0	100.0	100.0	0.0	0.0	100.0
1981	100.0	0.0	0.0	100.0	100.0	0.0	0.0	100.0	100.0	0.0	0.0	100.0
1982	100.0	0.0	0.0	100.0	100.0	0.0	0.0	100.0	100.0	0.0	0.0	100.0
1983	100.0	0.0	0.0	100.0	100.0	0.0	0.0	100.0	100.0	0.0	0.0	100.0
1984	100.0	0.0	0.0	100.0	100.0	0.0	0.0	100.0	100.0	0.0	0.0	100.0
1985	100.0	0.0	0.0	100.0	100.0	0.0	0.0	100.0	100.0	0.0	0.0	100.0
1986	100.0	0.0	0.0	100.0	100.0	0.0	0.0	100.0	100.0	0.0	0.0	100.0
1987	100.0	0.0	0.0	100.0	100.0	0.0	0.0	100.0	100.0	0.0	0.0	100.0



5. 紙パルプ会社に対する Questionnaire 及びその回答

5-1 Questionnaire (スペイン語版・日本語版)

5-2 回 答

ス ペ イ ン 語 版

Nombre de Fábrica:

Preguntas

1. ¿Podría mencionar las principales obras realizadas en el área de mejoramiento de la calidad del producto para aumentar el nivel de producción o si hubiere alguna nueva instalación maquinaria entre 1984 ~ 1988 (Período de 4 años)?
2. ¿Hay algún punto importante donde desee mejorar la tecnología en su fábrica?
3. ¿Podría describir en pocas palabras la relación de cooperación existente en la actualidad entre su fábrica y LATU?
Si hay alguna cosa que deseen solicitar a LATU mencionarlo también.
4. ¿Podría mencionar algunos ejemplos importantes en cuanto al logro obtenido gracias a la cooperación técnica proporcionada por LATU?

日 本 語 版

工場名

質 問

1. 貴場で1984～1988年の4年間の間に行われた主な品質改善工事，増産のための改造工事，及び新設工事等を教えて下さい。
2. 現在貴場でまだ技術的に改善したい問題がもしあればその主なものを教えて下さい。
3. 現在貴場とLATUとの間の協力関係について簡単に教えて下さい。
またLATUに対する要望事項があれば教えて下さい。
4. 今までにLATUとの協力により技術的に成果があがった事例があったら，その主なものを教えて下さい。

FNP Nov. 23, 1988

The interviewed: Norberto Casella
Technical Manager
Horacio Faedo
Chief of Paper Section

The answers to the questionnaire:

1. Paper

By the end of this year we will install a bill-blade coater on other machines. Then, the increase in paper production will be of 30%.

In February 1989, Machine N° 2 will produce 200 to 300 meters per minute.

We have replaced a size press by the bill-blade coater.

A new slitter has been installed.

Pulp

Installation of new chipper and new classification system of wood. It will reduce rejection and production of pulp is increased to 3%.

A new Bleaching tower that uses H_2O_2 is planned to be installed. ACCU RAY measurement system was installed in June 1988.

New equipments were installed in the finishing room, including one reel wrapping machine and one guillotine cutter.

A new chipper and wood preparation system, classifier and transport system were installed in the pulp mill.

Two boilers were rebuilt and now we feed the power plant with logs in a mechanical way.

2. Our objective is to increase the volume of speciality paper products.

We also want to improve the system of control of the machinery. The target of our change is to get a more accurate control in our production. There is a computer to help our work in the administrative area storing information. The information system should be improved.

3. The relation between FNP and LATU is good, smooth, and we maintain an easy communication.

We think it is useful to have a new "Elrepho" Colour measurement machine which costs U\$S 40.000.

We would like to implement a system of calibration testing instrument in the laboratory.

4. LATU has important and modern machines, this fact saves us a lot of money.

The pilot plant is very important for us, we can make trials in an intermediate scale between the laboratory and the mill.

Policy of FNP

1 - The market of our production is as follows:

50% is for domestic market and the other 50% for export which is mainly for Argentina.

Foreign Market: FNP is trying to develop the market to Paraguay, Bolivia, etc. for the stabilization of its market.

Domestic Market: At present our domestic market is 17kg per person/year, (1/10 of Japan) which is very low.

The consumption paper in the domestic market can be expected to increase with the increase of GDP in Uruguay.

In order to increase the profit of FNP, speciality paper with higher value can be produced.

FNP holds this high percentage of export due to:

- 1 - Better service for selling.
- 2 - High flexibility. FNP produces lots of different sizes according to the demand of the customer.
- 3 - Integration. FNP has integrated the raw material resources of its own country.
Wood is supplied by its own plantation, and pulp is processed. Kaolin is imported at present, but FNP has requested the University of the Republic to study on the production from our local resources.
- 4 - Human resources. Engineers and staff of FNP are of higher level in comparison to other neighboring countries.

Pamer Nov. 23, 1988

The interviewed: Ing. Cantoni
Director of Mill

1 1.1 Pulp

Softwood Sulfite pulp using anthraquinone was replaced by unbleached kraft pulp.

Production increases from 20 to 30 ton/day.

In 6 months they expected to produce 35 ton/day.

In 18 months they expected to produce 50 ton/day.

Unbleached kraft pulp made in Pamer is used instead imported one. Part of the production is sold to IPUSA & CICSSA (~150 ton/month).

1.2 Paper

Production of paper machine N° 1 was increased 15% by changing the three presses for new ones nip pressure (100,65,45 kg/cm). The more compact equipment allows the installation of 3 more dryers.

Actual production is 45 ton/day of liner and 54 ton/day of medium.

Other new equipment:

- Pulper for stock preparation
- 2 double disks refiners

1.3 Corrugated plant

A new corrugated plant was mounted at Mercedes.

Covered area: 6.000 m²

Production capacity: 2.000.000 m²/month

Corrugated machine: Langsmont (USA) able to make single or double wall board.

It is also possible to produce single wall double medium board (dual arch) (Argentina)

Other equipment: - Curtain coater

- Printer (2) (Italy)

- Stitching machine

2. Research on the possibility to replace softwood unbleached kraft pulp by waste paper stock.
Study on adhesives & impregnation products in order to improve wet strenght reducing cost and weight of boxes.

3. Pamer works in close cooperation with LATU and is using frequently the pulp and paper laboratory in order to solve every day technical problems.

They think is important to improve the conditioning capability of LATU. At present there is only one environmental chamber that is not enough to able testing in the different required conditions:

ex.:	5°C	85% Hr
	20°C	95% Hr
	23°C	50% Hr
	20°C	65% Hr
	15°C	85% Hr
	etc.	

Pamer wants to send one or two assistants from its plant in Montevideo to be trained at LATU in all relevant tests on pulp paper & board in order to able them to make routine quality checks of their production at LATU facilities.

4. Working together with LATU was possible to:

- improve the quality and lower the cost of boxes.
- certify the quality of citrus boxes.

The interviewed: Ing. Andrés Calo
Ing. Hugo Cuba

1. New investments were concentrated in the Mercedes plant. At Montevideo only small modifications were done.

Examples: - automatic control for cutting sizes of corrugated board.
- automatic glueing, stitching and strapping machine for corrugated boxes.

2. Optimization of the relation. Performance/cost of corrugated boxes.
 - Pulp production for liners, mediums and sack kraft.
 - Use of dual arch instead of double wall corrugated board for some uses (ex. citrus boxes).

3. We work in close cooperation with the pulp & paper laboratory of LATU in the fields of quality control, research and development and working groups (together with exporters and/or users of our products).

We are interested in:

- Sending technical personnel to LATU to be trained in usual tests on pulp, paper and corrugated boxes in order to make by ourselves the routine control work and making possible that the engineers from LATU and our company be concentrated in the R&D field.
- Increase the activity of the technical groups formed with exporters, box producers and LATU.
- Study different pulp combinations to produce liners, mediums, kraft paper for multiwall sacks, etc.

For us could be very important if LATU could reinforce its capabilities to test boxes and bags under different climatic conditions, through the adquisition of an additional climatic chamber.

4. Working together with LATU were developed boxes for different products like citrus, fish, tobacco, etc.
Work includes test of different proposed designs, quality control, follow up of pilot trials and commercial exports and feedback of the results.

CICSSA

Nov. 25, 1988

Attend: Sr. Mario Furrer - Director
Cr. Pablo Rodríguez - Manager
Ing. Alberto Majó - Engineer
Ing. María Mórtola - Engineer

Answers to the questionnaire:

1 - Conditioning and repairs of most production equipment

New equipment

Paper production	}	Refiners
		Reconditioning of - size press
		- yankee dryer
		Centrifugal cleaners

Now they can increase production and quality of papers while lowering the basis weight.

Corrugated plant

New equipment: double wall corrugating machine
Case maker
Stitching machine
Waxing machine (curtain coater)

2 - Papermaking: they want to improve paper formation to enable producing higher resistance boxes with lower basis weight.

Boxes: optimization of the combination of materials, box construction and performance of final product.

3 and 4

CICSSA works in very close cooperation with LATU. As they have very few testing instruments they're working at LATU everyday for routine quality control as well as for research and development.

Examples of cooperation

- Study on the different raw materials for producing liners and mediums in order to define the better technical and economical combination for the applications intended.
- Relation between paper properties (ring crush, concora crush, concora liner test, concora medium test, etc.) to the performance of boxes under different climatic conditions.
- Searching of additives and adhesives to improve wet resistance of corrugated materials.

CICSSA wants to ask LATU to reinforce its climatic condition capability, to improve the possibilities to reproduce the environment to which boxes (mainly export ones) will be subjected.

6. 第三国研修参加予定国の紙パルプ関係のデータ

(出典：紙パルプ世界展望，1988年度版)

◎印 第3回研修参加予定国

◎ コスタリカ

人口：2,655千人 国土面積：50,898 km²

一人当たり紙・板紙消費量：45 kg (推)

紙・板紙工場数：2 パルプ工場数：1 (MP)

全紙・板紙年産能力：18千トン

全パルプ年産能力：25千トン

生産・輸出入統計 (単位：1,000 M/T)

生産量	1986年(推)	1987年(推)
紙・板紙		
家庭用薄葉紙	11	11
板紙	1	1
紙・板紙合計	12	12
パルプ		
機械パルプ	5	5
パルプ合計	6	6
古紙回収量	3	3
古紙消費量	4	4
輸出入量		
紙・板紙輸入量	110	110
紙・板紙輸出量	2	0
パルプ輸入量	2	2
パルプ輸出量	1	1
古紙輸入量	2	2

◎ エルサルパドル

人口：5,072千人 国土面積：21,393km²

一人当たり紙・板紙消費量：13kg(推)

紙・板紙工場数：3

紙・板紙年産能力：50千トン

生産・輸出入統計(単位：1,000M/T)

生産量	1986年(推)	1987年(推)
紙・板紙		
印刷・筆記用紙	18	18
うち上質紙	15	15
中下級紙	3	3
その他の包装用紙	1	1
家庭用薄葉紙	9	9
板紙計	1	1
紙・板紙合計	29	29
古紙		
古紙回収量	5	5
古紙消費量	18	18
輸出入量		
紙・板紙輸入量	40	40
紙・板紙輸出量	2	2
パルプ輸入量	12	12
古紙輸入量	13	13

◎ ドミニカ共和国

人口：6,588千人 国土面積：48,442km²

一人当たり紙・板紙消費量：10kg(推)

紙・板紙工場数：2

全紙・板紙年産能力：15千トン(推)

生産・輸出入統計(単位：1,000M/T)

生産量	1986年(推)	1987年(推)
紙・板紙		
紙・板紙合計	9	9
輸出入量		
紙・板紙輸入量	56	55
パルプ輸入量	4	4

◎ ボリビア

人口：6,200千人 国土面積：1,098,581km²

一人当たり紙・板紙消費量：3kg(推)

紙・板紙工場数：1

全紙・板紙年産能力：2千トン(推)

生産・輸出入統計(単位：1,000M/T)

生産量	1986年(推)	1987年(推)
紙・板紙		
紙・板紙合計	1	1
輸出入量		
紙・板紙輸入量	20	20

◎ ジャマイカ

人口：2,100千人 国土面積：11,000 km²

一人当たり紙・板紙消費量：20 kg

紙・板紙工場数：1

全紙・板紙年産能力：15千トン

生産・輸出入統計(単位：1,000M/T)		
生産量	1986年(推)	1987年(推)
紙・板紙		
紙・板紙合計	12	13
古紙回収量	1	1
古紙消費量	1	1
輸出入量		
紙・板紙輸入量	30	30
パルプ輸入量	1	1
古紙輸入量	2	2

◎ パラグアイ

人口：3,722千人 国土面積：406,752 km²

一人当たり紙・板紙消費量：7 kg(推)

紙・板紙工場数：3

全紙・板紙年産能力：25千トン

生産・輸出入統計(単位：1,000M/T)		
生産量	1986年(推)	1987年(推)
紙・板紙		
印刷・筆記用紙	2	2
包装用紙	10	10
家庭用薄葉紙	1	1
紙・板紙合計	13	13
古紙		
古紙回収量	15	15
古紙消費量	13	13
輸出入量		
紙・板紙輸入量	13	13

◎ パナマ

人口：2,038千人 国土面積：77,082km²

一人当たり紙・板紙消費量：40kg(推)

紙・板紙工場数：3

全紙・板紙年産能力：30千トン

生産・輸出入統計(単位：1,000M/T)

生産量	1986年(推)	1987年(推)
紙・板紙		
段ボール原紙	5	5
その他の包装用紙	5	5
家庭用薄葉紙	18	18
紙・板紙合計	28	28
輸出入量		
紙・板紙輸入量	55	55
パルプ輸入量	1	1
古紙輸入量	6	6

ペ ル ー

人 口：20,207千人 国土面積：1,280,219 km²

一人当たり紙・板紙消費量：156kg

紙・板紙工場数：14 パルプ工場数：3 (AP)

全紙・板紙年産能力：361千トン

全パルプ年産能力：311千トン

紙・板紙稼働率：68% (1986年：51%)

パルプ稼働率：46% (1986年：39%)

紙・パルプ産業従業者数：2,320人

生産・輸出入統計 (単位：1,000 M/T)

生産量	1986年(推)	1987年(推)
紙・板紙		
中下級印刷・筆記用紙	51	61
段ボール原紙*	56	60
うちKライナー	27	29
その他の包装用紙	35	37
家庭用薄葉紙	22	29
板紙計 (* を含まず)	21	27
紙・板紙合計	184	214
パルプ		
パルプ合計	122	145
古紙回収量	72	86
古紙消費量	55	67
輸出入量		
紙・板紙輸入量	66	71
パルプ輸入量	56	72

1987年、ペルーの製紙業界は原料バガスの不足や、パルプ、機械部品の輸入困難にも拘らず、まずまずの業績を達成した。1988年の紙・板紙生産量が前年比3%の増が見込まれる。

Centro Pnpelero 社は、'88年、年産12,600トンの印刷筆記用紙マシンをスタートさせる予定となっている。

◎ グアテマラ

人口：8,070千人 国土面積：108,889km²

一人当たり紙・板紙消費量：12kg(推)

紙・板紙工場数：4 パルプ工場数：1(現在休止中)

全紙・板紙年産能力：50千トン

生産・輸出入統計(単位：1,000M/T)

生産量	1986年(推)	1987年(推)
紙・板紙		
印刷・筆記用紙	18	18
段ボール原紙*	3	3
その他の包装用紙	4	4
家庭用薄葉紙	6	7
板紙計(*を含まず)	3	2
紙・板紙合計	35	35
古紙		
古紙回収量	12	12
古紙消費量	40	42
輸出入量		
紙・板紙輸入量	60	65
紙・板紙輸出量	5	5
パルプ輸入量	5	5
古紙輸入量	30	30

◎ エクアドル

人口：1 0 0 0 0 千人 国土面積：2 7 0, 6 7 0 km²

森林面積：1, 2 4 5 km² 商材林面積：9 6 5 km²

一人当たり紙・板紙消費量：1 0 kg(推)

紙・板紙工場数：5 パルプ工場数：1

全紙・板紙年産能力：6 5 千トン

全パルプ年産能力：3 5 千トン

紙・板紙稼働率：9 3 %

紙・パルプ産業従業者数：1, 1 5 0 人

生産・輸出入統計(単位：1, 0 0 0 M/T)

生産量	1986年(推)	1987年(推)
紙・板紙		
印刷・筆記用紙	—	23
包装用紙	—	35
家庭用薄葉紙	—	10
紙・板紙合計	59	67
パルプ		
パルプ合計	—	6
古紙消費量	—	56
古紙回収量	—	49
輸出入量		
紙・板紙輸入量	—	30
パルプ輸入量	—	11
古紙輸入量	—	7

(注) 印刷・筆記用紙には、新聞用紙とプリストル板紙が若干づつ含まれる。

(出所) エクアドル政府統計局の発表数字による。

1987年は包装用紙・板紙と家庭用薄葉紙部門が好況であった。家庭用薄葉紙で2台の新マシンが今年稼働を予定しており、能力は年産7千トン増加する。

キ ャ ー パ

人 口：1 0,1 0 5 千人 国土面積：1 1 4,5 2 4 km²

一人当たり紙・板紙消費量：3 2 kg (推)

紙・板紙工場数：9 パルプ工場数：3

全紙・板紙生産能力：1 5 0 千トン(推)

全パルプ年産能力：6 0 千トン(推)

生産・輸出入統計(単位：1.0 0 0 M/T)

生産量	1986年(推)	1987年(推)
紙・板紙		
印刷・筆記用紙	40	40
その他紙・板紙	85	85
紙・板紙合計	125	125
パルプ		
パルプ合計(バガス)	40	40
古紙消費量	40	40
輸出入量		
紙・板紙輸入量	200	200
パルプ輸入量	50	50

◎ ウルグアイ

人口：3,000千人 国土面積：176,215km²

一人当たり紙・板紙消費量：17kg

紙・板紙工場数：5 パルプ工場数：2 (KP1, SP1, AP1)

全紙・板紙年産能力：83千トン

全パルプ年産能力：27千トン

生産・輸出入統計(単位：1,000M/T)

生産量	1986年(推)	1987年(推)
紙・板紙		
新聞用紙	1	1
印刷・筆記用紙	24	27
段ボール原紙*	13	15
その他の包装用紙	8	7
家庭用薄葉紙	6	6
板紙計(*を含まず)	5	2
紙・板紙合計	54	48
パルプ		
BKP	24	26
パルプ合計	24	26
古紙回収量	25	25
古紙消費量	27	27
輸出入量		
紙・板紙輸入量	10	18
紙・板紙輸出量	13	12
パルプ輸入量	9	10
パルプ輸出量	—	1
古紙輸入量	3	3

7. アフターケア協力に係るミニッツ (案)

MINUTES OF DISCUSSIONS ON THE AFTERCARE PROGRAM
FOR THE JAPANESE TECHNICAL COOPERATION
ON THE PULP AND PAPER QUALITY IMPROVEMENT PROJECT
IN THE ORIENTAL REPUBLIC OF URUGUAY

The Japanese Aftercare Survey Team (hereinafter referred to as " the Team ") organized by the Japan International Cooperation Agency (JICA) and headed by Mr. _____, has visited the Oriental Republic of Uruguay from _____ to _____, 1989 for the purpose of working out the details of the aftercare program for the Japanese Technical Cooperation Project on the Pulp and Paper Quality Improvement Project in the Oriental Republic of Uruguay (hereinafter referred to as " the Program ").

During its stay in the Oriental Republic of Uruguay, the Team has conducted a field survey and held a series of discussions with the authorities concerned of the Government of the Oriental Republic of Uruguay in respect of the desirable measures to be taken by both Governments for the successful implementation of the above-mentioned Program.

As a result of the survey and discussions, the Team and the authorities concerned of the Government of the Oriental Republic of Uruguay agreed to recommend to their respective Governments the matters referred to in the document attached hereto.

Montevideo, _____, 1989

Mr. _____
Leader,
Aftercare Survey Team,
Japan International Cooperation
Agency

Mr. _____
Technological Laboratory of Uruguay

THE ATTACHED DOCUMENT

I. COOPERATION BETWEEN BOTH GOVERNMENTS

1. The Government of Japan and the Government of the Oriental Republic of Uruguay will cooperate with each other in implementing the Program, for the purpose of furthering the effect of the Japanese Technical Cooperation for the Pulp and Paper Quality Improvement Project through the aftercare technical cooperation and thus contributing to the pulp and paper industry in the Oriental Republic of Uruguay.
2. The Program will be implemented in accordance with the Tentative Schedule of Implementation which is given in Annex I.

II. DISPATCH OF JAPANESE EXPERTS

1. In accordance with the laws and regulations in force in Japan, the Government of Japan will take necessary measures through JICA to provide at its own expense services of the Japanese experts as listed in Annex II through the normal procedures under the Technical Cooperation Scheme of the Government of Japan.
2. The Japanese experts referred to in 1. above will be granted in the Oriental Republic of Uruguay the privileges, exemptions and benefits no less favourable than those accorded to experts of third countries or of other international missions working in the Oriental Republic of Uruguay.

III. PROVISION OF MACHINERY AND EQUIPMENT

1. In accordance with the laws and regulations in force in Japan, the Government of Japan will take necessary measures through JICA to provide at its own expense such machinery, equipment and other materials (hereinafter referred to as " the Equipment ") necessary for the implementation of the Program as listed in Annex III through the normal procedures under the Technical Cooperation Scheme of the Government of Japan.

2. The Equipment will become the property of the Government of the Oriental Republic of Uruguay upon being delivered c.i.f. to the Uruguayan authorities concerned at the ports and/or airports of disembarkation, and will be utilized exclusively for the implementation of the Program in consultation with the Japanese experts referred to in Annex II.

IV. TRAINING OF URUGUAYAN PERSONNEL IN JAPAN

Training of counterpart personnel in Japan is not included within the scope of the Program.

V. MEASURES TO BE TAKEN BY THE GOVERNMENT OF THE ORIENTAL OF REPUBLIC OF URUGUAY

1. The Government of the Oriental of Republic of Uruguay should make necessary arrangement for requesting the dispatch of Japanese experts and the provision of the Equipment as mentioned III. above by submitting the application forms (A-1 Form and A-4 Form) as soon as possible through the proper channel.
2. In accordance with the laws and regulations in force in the Oriental Republic of Uruguay, the Government of the Oriental Republic of Uruguay should take necessary measures to provide at its own expense supply or replacement of machinery, equipment, instrument, vehicles, tools, spare parts and any other materials necessary for the implementation of the Program other than those provided through JICA under III. above.
3. In accordance with the laws and regulations in force in the Oriental Republic of Uruguay, the Government of the Oriental Republic of Uruguay should take necessary measures for tax exemption, custom clearance, and internal transportation of the Equipment as mentioned III. above as soon as it arrives at the ports of disembarkation.
4. In accordance with the laws and regulations in force in the Oriental Republic of Uruguay, the Government of the Oriental Republic of Uruguay should take necessary measures to meet all running expenses necessary for the implementation of the Program,

5. The Government of the Oriental Republic of Uruguay should allocate the necessary numbers of suitably qualified personnel corresponding to each Japanese expert to be dispatched by the Government of Japan as specified in Annex II for the effective and successful transfer of the technology under the Program.
6. The Government of the Oriental Republic of Uruguay should make any other necessary arrangement to contribute positively to the convenience of the successful implementation of the Program.

VI. CLAIMS AGAINST JAPANESE EXPERTS

The Government of the Oriental Republic of Uruguay undertakes to bear claims, if any arises, against the Japanese experts engaged in the Program resulting from, occurring in the course of, or otherwise connected with the discharge of their official functions in the Oriental Republic of Uruguay except for those arising from the willful misconduct or gross negligence of the Japanese experts.

VII. TERM OF COOPERATION

The technical cooperation for the Program mentioned in this Attached Document will be implemented before the end of March 1990 (within the Japanese fiscal year 1989).

ANNEX I TENTATIVE SCHEDULE OF IMPLEMENTATION

YEAR	1989												1990		
	4	5	6	7	8	9	10	11	12	1	2	3			
DISPATCH OF THE SURVEY TEAM	-														
DISPATCH OF JAPANESE EXPERTS	.. ¹ 2 ---														
PROVISION OF THE EQUIPMENT														

JAPANESE EXPERTS ; ...¹ = EXPERT ON THE PULP AND PAPER QUALITY
 (1~2)

²
 --- = EXPERT ON REPAIR AND MAINTENANCE
 (1~2)

ANNEX II JAPANESE EXPERTS

In order to implement the Program, the following Japanese experts will be dispatched to render such technical guidance as follows.

1. Short-term experts in the field of:
 - (a) Repair and maintenance of the equipment provided by the Government of Japan
 - (b) Complemental technical guidance in the field of _____

2. Scope of technical guidance:
 - (a) Repair and maintenance
To train the Uruguayan counterpart personnel and transfer necessary technology for the operation, maintenance, check-up and repair of the Equipment provided by the Government of Japan.
 - (b) Supplemental Technical Guidance within the scope of R/D
To train the Uruguayan counterpart personnel and transfer necessary technology in the above field for supplementing the technology transfer during the term of cooperation of the Japanese Technical Cooperation for the Pulp and Paper Quality Improvement Project.

ANNEX III PROVISION OF THE EQUIPMENT

The Equipment to be provided by the Government of Japan through JICA will be as follows:

1. Equipment for Supplemental Technical Guidance

2. Spareparts and Accessories for the machinery and equipment provided by Japan

The provision of the above equipment may be changed subject to the conditions of budget and delivery of the Equipment.

JICA