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REPORT OF SURVEY ON SIX CDCC COUNTRIES REGARDING THE DEVELOPMENT OF THE TIMBER INDUSTRY AT THE SUB-REGIONAL LEVEL

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C O N T E N T S

PREFACE

1. In accordance with the decision taken at the Caribbean Development and Co-operation Committee (CDCC) meeting of 21-27 March 1979 in Suriname, it was decided (See Para. 103.2 of report of meeting)[1/] that a consultancy was needed to study the timber of the sub-region, "especially Inventory, Exploitation of Waste, Reafforestation and Marketing". Financial provision was made at page 72 of the said report.

2. In addition, the UNCTAD Consultant for ECLA (CEPAL/CARIB 79/2 of 23 January 1979) suggested at page 2 that "an expert's report is recommended to be obtained prior to calling of an international meeting with the participation of Guyana, Suriname and Belize, aiming at a Regional Timber Export Committee".

3. UNCTAD made available to the CDCC Secretariat the services of a Consultant to carry out a preliminary study for the development of the Timber Industry at the sub-regional level, and to consider the need for, and functions of, a Timber Development Association.

4. In summary, this study is to make recommendations for:

(a) maximising the timber resources of the CARICOM sub-region studied;

(b) minimising the waste of the timber of the sub-region;

(c) considering the possibility of regional co-operation for the production, marketing and export of timber;

(d) considering the need for and the functions of a Timber Development Association for the sub-region.

5. During the months of June and July 1980, the Consultant visited the six Caribbean countries selected, namely: 1. Belize; 2. Guyana; 3. Haiti; 4. Jamaica; 5. Suriname; and 6. Trinidad and Tobago

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1/ E/CEPAL/CDCC/54/Rev.1.

collected data, and held discussions with various persons. The results are given at Appendix 2 and Appendix 4, respectively, of this report.

6. I am grateful to all of those who made this report possible and especially for the help given by UN staff at all levels, and more specifically in Haiti and Jamaica.

7. The logistic help received from the Directorate and Staff of the UN-ECLA Office for the Caribbean as regards the organization of the visits and the co-ordination and final preparation of this report is appreciated and acknowledged with thanks.

8. To my wife who helped with minor corrections and typing the draft as well as to supporting colleagues, I am grateful.

INTRODUCTION

(1) The countries of Belize, Guyana, Haiti, Jamaica, Suriname, Trinidad and Tobago were visited during the months of June and July 1980. A map of the region with the location of these countries is given at Appendix 1.

(2) Data was collected and discussions were held with some 30 persons. A summary of the data collected is given at Appendix 2, and a list of the persons with whom discussions were held is to be found at Appendix 4.

(3) The sources of the data are indicated at Appendix 2, and in many cases the information was obtained verbally. In many instances the data was not up-to-date, and the limited time for the study did not permit verification of the facts. There is the need, therefore, to update and verify the relevancy of the data. Nevertheless, it was the best information available at the present time and it forms the basis of the recommendations proposed in this report.

(4) In spite of the limitations noted in (2) above, a pattern of behaviour has emerged for the six countries of the sub-region, which I have tried to analyze in Part I of the main Report - Reports on the Six Supporting Countries.

(5) In Part II, we take a look at the technical considerations, especially those of timber production, consumption and waste.

(6) In Part III, recommendations are made for the sub-regional development of the timber industry, and relevant Action Programmes are delineated.

(7) In Part IV, consideration is given to the Institutional arrangements considered necessary for the implementation of the Action Programmes such as the formation of a Regional Timber Development Association.

(8) In the time available for this study, it was not possible to do any type of feasibility studies. However, the trends were observed, and based on these, certain recommendations are made. If these are

properly implemented, and should there be some measure of sincere co-operation between the member countries of the sub-region, there is no reason why the timber resources of the area cannot be developed for mutual advantage. If not, these resources may have to lie dormant until some future generation takes advantage of their potential.

PART I

The Collection of Data and Reports on Supporting Countries with Observations and Conclusions Derived from Them

PART I

(9) The data collected on the six CDCC countries are given at Appendix 2, and a summary is to be found at the front of the Appendix.

Data was collected for each of the six member countries, namely:

1. Belize
2. Guyana
3. Haiti
4. Jamaica
5. Suriname
6. Trinidad and Tobago

In many instances the data was not up-to-date and so could not always be verified in the limited time available. Nevertheless, it is the best information available at the present time, and it forms the basis of the recommendations proposed in this report.

The following are the types of data collected for each country;

(1) Sources of Data

(2) Location

(3) Area

(4) Population

(5) Main Products

(6) Gross National Product (GNP)

(7) The Forestry Sector

7(1) The Area of Forested Land

7(2) Forest Resources (a) Volume; (b) Value

7(3) (a) Production of Timber

(b) Imports; Exports; Trade Balances

(c) Consumption of Forest Products

(8) Trends

8(1) Cost of Forest Service

8(2) Population

8(3) GNP

8(4) Trade Balances

(10) A summary of the data is given at the front of Appendix 2 for all six countries visited.

A summary of the various resources and possible deficiences for the six CDCC countries have been tabulated on page 7.

(11) 1. BELIZE is a moderate-sized country for the sub-region, with no population pressure, and a moderate timber producer. It has average timber resources and GNP, and although a gross exporter of forest products, it has become a net importer of these products. Controlled local timber prices tend to depress the industry. This also results in the import of Pine at double the locally controlled price. There is the need for timber preservation, such as RENTOKIL, to prevent waste of the timber resources. The private sector plays a major role in the development of the timber industry in Belize.

(12) 2. GUYANA is the largest country of the sub-region, with no population pressure, and is a good timber producer. It has excellent timber resources, but low GNP and although a gross exporter of forest products, like Belize, Guyana has become a net importer of forest products. Controlled local timber prices and foreign exchange controls for vital equipment and spares tend to depress the industry. The Government is conscious of the forest waste problem, and is actively engaged in projects which aim at the production of energy from sawmill and other forest residues. The timber industry in Guyana is developed mainly by several large companies - both privately and Government-owned.

(13) 3. HAITI is a moderate timber producer, but consumes large amounts of local fuel wood because of population pressures. Because of this fact, there is the urgent need for watershed management to prevent erosion of the forested hills, and siltation of the valleys. Haiti has very limited timber resources, extremely low GNP, and is a net importer of forest products. The local view is that there is the need for Government to consult and co-operate with the private sector before any form of association with other countries in the sub-region can be considered. In Haiti, the timber industry is being developed through the joint co-operation of the private and the Government sectors.

(14) 4. JAMAICA is a minor timber producer, but a moderate consumer of forest products. There is need for watershed management to prevent erosion and siltation

as is the case in Haiti. Jamaica has very limited timber resources, and is a net importer of forest products. It has a good GNP but has balance of trade problems. Jamaica is embarking on an expanded reafforestation scheme - to be self-sufficient in timber - spearheaded by the Forest Industries Development Co. Ltd. (FIDCO). The local view is that a timber port with adequate shipping would support a timber complex for timber manufacture if logs could be imported from the sub-region. The timber industry in this country is being developed jointly, by the private and Government sectors.

(15) 5. SURINAME is a good timber producer, with no population pressure, and of moderate size... It has good timber resources, a fair GNP; but although a gross exporter of forest products, it has become a net importer of these products... The timber industry in Suriname is being developed jointly by the private and Government sectors. The need for treated lumber was considered desirable.

(16) 6. TRINIDAD AND TOBAGO is a moderate timber producer, and a heavy consumer of forest products. Because of population pressures as in Haiti and Jamaica, there is need for watershed management to prevent erosion and siltation. This country has very limited timber resources, excellent GNP, and no balance of trade problems. It has embarked upon a reafforestation programme so as to be self-reliant for timber supplies, but it is unlikely that this can be realized in the near future. The timber industry is being developed jointly by the private and Government sectors.

(17) Based on the data collected in Appendix 2, the following observations and conclusions are made:

> Guyana, Suriname, and to a lesser extent Belize, are the major timber producers of the countries visited. They have adequate timber resources for the entire group. In these countries, since there is no population pressure to clear fell the land, and since logging is selective over large forest areas, there

is no urgent need for watershed management and reafforestation programmes at the present time. The other three countries - Haiti, Jamaica, Trinidad and Tobago - are the major consumers of forest products, but do not have adequate timber resources. In these countries, there is the need for watershed management and reafforestation programmes to make them self-reliant for timber in the long run. The population pressure in Haiti, especially for fuel wood, has already had a devastating effect on the land resources which erode the hill-tops, resulting in siltation of the lowlands.

(18) Although Guyana, Suriname and Belize are gross timber exporters, they have now become net importers of forest products. They are particularly deficient in pulp and reconstituted wood manufactures. In addition, the dollar value of their timber exports is not rising correspondingly with the value of timber imports and imported spares. The net result is a steadily increasing balance of trade deficit, so far as forest products are concerned, for all of the countries of the sub-region.

(19) There is the need, in the sub-region, to develop timber industries which use wood in the bulk, such as wood chips for fuel; charcoal; chip, particle, cement or other board; and the chemical digestion of wood chips for the manufacture of pulp and paper. If such projects are implemented, they would reduce the trade deficit at (18).

(20) There is the need, in the region, to avoid waste in the forest and at sawmills; to treat wood used for building; and to use wood waste for the production of pulp and energy.

(21) The CARICOM skills have been developed in Trinidad and Tobago and Jamaica, which have the financial resources - the highest GNP - and the potential for capital investment in the forest industry.

(22) All of the countries visited have too many sawmills and an inadequate log supply. Therefore, there is the need for joint ventures which could provide an adequate log supply for the countries of the sub-region.

(23) There is also the need to decontrol local prices. Such a measure would prevent the entry of imports at double the local rate. There is no rationale for permitting imported lumber at $1.20 FBM and controlling the local price at 60¢ FBM. This merely ensures a loss, depresses the industry, and subsidizes the consumer. If the timber industry is to develop and expand, it must have the increasing surplus with which to buy spares and reinvest in new enterprises. It is a law of nature that all things either grow, or remain stagnant for a while, or die. Most of the timber industries in the sub-region seemed to be at the point of stagnation and in need of some help, economically, to recover, grow, and develop.

(24) Since some of the countries studied have financial resources and human skills, while others have forest resources, it would seem clear that there is the need for some measure of co-operation - both at the national (through private and Government enterprise) and at the international level. There is also the need for sound, efficient management if the joint ventures proposed are to be a success - socially and economically.

THE SUB-REGION AT A GLANCE

Particulars	Belize (1)	Guyana (2)	Haiti (3)	Jamaica (4)	Suriname (5)	Trinidad and Tobago (6)
1. The Human Resource	*	**	*****	***	*	**
2. The Human Skills for Manufacturing	*	**	***	***	**	***
3. The Forest Resources	***	*****	**	*	*****	*
4. Wood Consumers	*	***	*****	**	*	***
5. Wood Producers	*	***	*	*	***	*
6. Gross Wood Exporters	*	*	-	-	*	-
7. Net Wood Importers	*	*	*****	**	*	***
8. The Capital Resources	**	**	*	****	***	*****
9. Manufacturing Capacity with related Infra-structures	*	*	**	****	***	****
Possible Deficiencies	1,2,8,9	8,9	3,8,9	3	8,9	3

NOTE: The five star asterisk (*) have been used as a measure of size, for want of a better means at the present time.

PART II

Technical Considerations

1. Timber Production
2. Timber Consumption
3. Timber Waste

PART II

(25) Timber Production

The productive capacity of any country or economic unit is limited, in the short run, by the equipment and skills at its disposal.

(26) The productive capacity, in the long run, can only be increased by increasing the productive capacity - assuming that efficiency is at a maximum.

(27) This means that capital investments must be made in the desired areas provided the forest resources, skills and markets are available.

(28) In order to monitor production, it is necessary to have some idea of the needs of the sub-region and world markets. It will be necessary, therefore, to carry out feasibility studies in those projects considered desirable, to ascertain their economic feasibility. These studies would determine what, where, and when new productive units should be established in the sub-region.

(29) Timber Consumption

In order to monitor consumption, it is essential that reliable data be made available as regards Production, Imports and Exports (including Re-Exports). This study must include Import/Export controls and the use of tariffs to help improve the balance of trade position for the sub-region.

(30) Timber Waste

This comprises

(a) leaves, bark and other wood left in the forest;

(b) trees not now considered merchantable, for one reason or another;

(c) sawmill waste - short ends which could be joined or made into block board or remanufactured into smaller units.

Sawn waste also includes offcuts and sawdust which comprise 50% of the timber produced, and could be used for the production of fuel or chipped and made into pulp or some form of particle board.

The only solution to the problem of waste in the timber producing countries of Belize, Guyana and Suriname must rest in the bulk use of wood for the production of chips for pulp, some form of reconstructed wood, or the production of fuel and/or chemicals.

(d) The need for properly manufactured, dry and treated lumber should be stressed as a form of avoiding waste of the timber resources. Termites and wood ants could destroy a building in 10 years, but treatment with wood preservatives such as RENTOKIL could extend the life to 50 years. Thus failure to preserve the wood is tantamount to waste.

(e) In any housing programme, there is the need to employ a proper mix of wood/cement to ensure optimum use of the building resources. The correct mixture would depend on the particular country and the availability of cement and timber products.

(f) There is the need to recycle resources, for example Newsprint, whenever possible. Failure to do this is a form of waste.

(31) In reality, if sewage can be converted into chemicals and other useful material, then theoretically there is no reason for waste in the timber industry. Wood can be burnt and converted into charcoal, 1 cu.ft. of hardwood has a heat value of 7,000 - 9,000 British thermal units (BTU's) at 40% moisture content. This wood can either be converted into steam and produce electricity or gasified and used in an internal combustion engine, or stored in a cylinder for future use.

(32) The problem of waste, therefore, in the timber industry, is simply one of technology and of finding some means of economically converting the presently considered "Waste" into a consumable product.

PART III

Recommendations for the Sub-regional Development of the Timber Industry Action Programmes

PART III

(33) In this section, we are concerned with the recommendations which have, so far, been made. Hereunder is listed the order in which they appear in the foregoing parts. However, I shall rearrange them in a more systematic fashion in Part IV where we will consider the institutional arrangements for implementation of these programmes, and the structure and functions of the proposed Timber Development Association (TDA).

(34) The recommendations are:

(a) that member countries and institutions be encouraged to provide reliable and up-to-date data of all forest activities, such as Production - logging and sawmilling; Imports: Exports; Prices. These should be monitored continuously by the proposed Timber Development Association. (See para. 3).

(35) (b) that feasibility studies be done to develop the forest resources of the area for mutual benefit. These should be done by the proposed Timber Development Association. (See paras. 8 and 28 above and 49 and 52 below).

(36) (c) that there is the urgent need for watershed management and reafforestation, especially in Haiti, Jamaica and Trinidad and Tobago so as to protect the soil and make them more self-reliant as regards the supply of timber. (See para. 17).

(37) (d) that special efforts be made to reduce the trade deficit on timber products for the sub-region as a whole, and that the group make a special effort to become a net timber exporter - including logs, lumber, reconstituted wood, pulp, paper and other wooden manufactures and by-products. (See para. 18).

(38) (e) that the countries in the sub-region focus on the development of timber industries which use wood in bulk, such as wood chips for fuel; charcoal; reconstituted wood (particle, chip, concrete or other board); and the chemical digestion of wood chips for pulp, paper and wood chemicals. (See para. 19).

(39) (f) that efforts be made to reduce waste to a minimum, in the forest and especially at sawmills. All wood should be properly treated. (See para. 20).

(40) (g) that regional co-operation and joint ventures are desirable. (See paras. 22-24; 25).

(41) (h) it is necessary to monitor timber production, consumption, imports, exports, tariffs and prices. This should be done by the Timber Development Association. (See para. 29).

(42) (i) that there is the need to decontrol local prices thus making them competitive with export prices. (See para. 23).

(43) (j) that the Timber Development Association should initiate the necessary research, feasibility studies and financing for the projects concerned with the conversion and recycling of timber wastes. (See paras. 30-32). It is also recommended that the TDA co-operate with all universities, especially those of the sub-region such as the University of the West Indies and the University of Guyana, interested in research. The major reason for making these recommendations is the fact that the conversion of timber waste into a consumable product is technologically possible, though it may not be economically feasible.

PART IV

Institutional Arrangements for Implementation

of

Action Programmes

(a) The Formation of A Regional Timber Development Association

(b) Proposed Functions and Structure of the Association

PART IV

(a) The Formation of a Regional Timber Development Association

(44) The formation of a Regional Timber Association is necessary as a means of implementing the recommendations and action programmes made in Part III.

(45) It is suggested that a suitable name for the Association would be The Caribbean Regional Timber Development Association (CRTDA).

(46) The Association should be international and must be run efficiently on sound business principles.

(b) Proposed Functions and Structure of CRTDA

(47) The main functions of CRTDA should be to:

(i) Aim at maximising the physical output of wood products for the sub-region and maintain a good quality product.

(ii) Expand the timber market and share the larger orders.

(iii) Maximise Price, especially for export and make local prices competitive with the export ones. Since the production of timber for the sub-regional countries is only .05% of the total world production, it is unlikely that such a small organization will have a profound effect on world market prices of timber products. It may, however, merge with a larger organization at a later date.

(iv) Share information and technology.

(v) Initiate Research and share the results.

(vi) Monitor: Production
Imports
Exports
Tariffs
Prices

for the sub-region, and study international trade and markets.

(vii) Initiate feasibility studies in desirable areas and promote joint ventures to be financed locally or internationally, both by governments and private enterprises.

(viii) Initiate programs for the elimination of timber waste and consider the possibility of recycling timber products at the sub-regional level.

(48) It was felt by some persons that the board should

(a) be managed on sound efficient lines, especially when joint Government ventures were formed;

(b) that if the CRTDA centralised the marketing of timber products, it may experience some difficulty in handling a bulky product such as wood;

(c) that there would be the need for COOPERATION AND CONFIDENTIALITY with the group of the CRTDA, especially from competitors;

(d) that there was the need for free entry into, and exit from the Association;

(e) that the CRTDA should be run exclusively by the Board;

(f) that although the board monitored production, that it should not concern itself with the ownership of the means of production. This was considered a local matter for individual governments to decide for themselves.

(49) As regards the financing of the board (CRTDA), it is felt that a simple levy of 2 - 5% could be made on IMPORTS and/or EXPORTS and this fund used to embark on the various ventures.

(50) The extent of the levy would be negotiable when a member joined the CRTDA, and could therefore be flexible.

(51) The CRTDA could also participate in joint ventures and reinvest the revenue earned on current projects in new areas for the development of the timber industry.

(52) There is the need for feasibility studies to be done in the following areas:

(a) Bulk uses of wood in the forest and at sawmills for the production of

(i) Timber products

(ii) Fuel and charcoal

(iii) Pulp and Paper

(iv) Chemicals

(b) Elimination of Waste

The waste wood should be burnt and used as energy (steam, electricity, gas) or burnt and stored as charcoal which can be burnt later or used to manufacture gas or chemicals. Some of it should be chipped, digested and made into pulp.

(c) Developing the timber industry for:

(i) building material

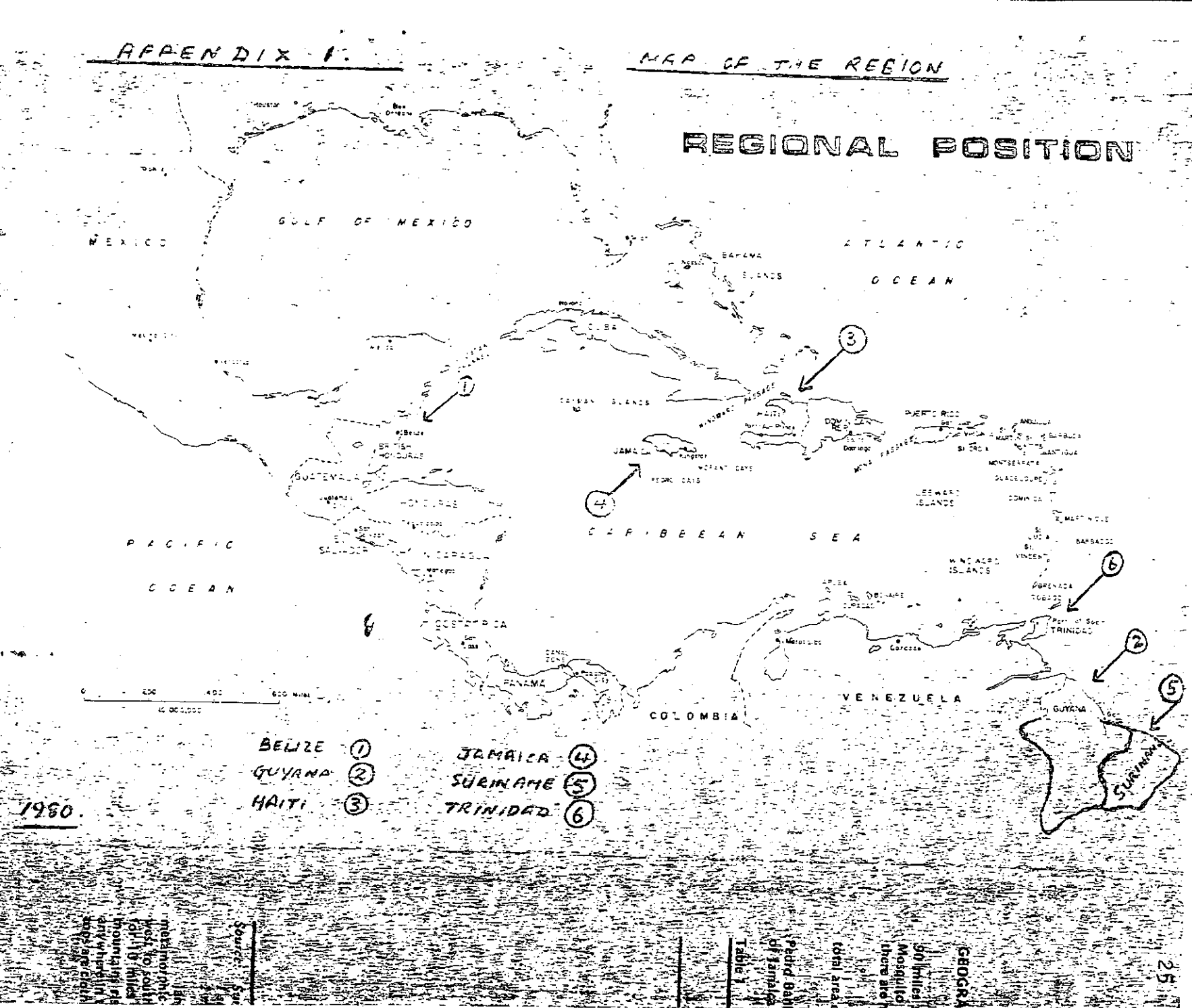
(ii) furniture and other manufacture

This would include a detailed study of the existing market and the possibility of producing and introducing substitutes in the sub-region and later on the international market.

(53) If the member countries of CDCC agree with these proposals and support the view that the CRTDA should be formed, then it will be necessary to have the necessary legislation drafted so that it can become a reality.

APPENDIX 1.

MAP OF THE REGION



APPENDIX 2

DATA COLLECTED ON

1. BELIZE
2. GUYANA
3. HAITI
4. JAMAICA
5. SURINAME
6. TRINIDAD AND TOBAGO

APPENDIX 2

SUMMARY OF DATA - ALL COUNTRIES

	PARTICULARS UNIT	BELIZE (1)	GUYANA (2)	HAITI (3)	JAMAICA (4)	SURINAME (5)	TRINIDAD + TOBAGO (6)	TOTAL
3.	Area - '000 sq. mls.	8.87	83	10.71	4.24	70	1.98	178,800
4.(a)	Population '000	145	825	5,000	2,123	400	1,180	9,673,000
4.(b)	Density sq. ml.	16	10	466	500	6	595	54
6.	GNP Per capita = US $	954:- (1979)	472:- (1978)	82:- (1978)	1,990:- (1978)	1,595:- (1977)	3,200:- (1978)	990
7.1	Forested area '000 sq. ml.	8.5	71.4	4.82	1.02	63.7	1.2	150,640
7.2	Forest resources Volume: Million M^3							
	Timber	88	480	20.8	11.8	450	12.6	10,632,000
	Fuel	79.2	4,320	187.2	106.2	4,050	113.4	95,688,000
7.2	Stumpage value Million = US $	880	20,720	2,080	269	23,022	173.6	47,144,600,000
7.3	Production Million M^3							
	Timber	.04 (1977)	.17 (1978)	.616 (1973/74)	.052 (1979)	.36 (1979)	.09 (1977)	1,328,000
	Fuel	-	-	5.544	-	-	-	
7.3	Sawn Production Million FBM	8.1 (1979)	35.4 (1975)	6 (1973/74)	10 (1979)	4.5 (1978)	21 (1977)	85,000,000
7.3	No. of Sawmills	40	74	Not known	70	30	63	277

APPENDIX 2 (CONT'D)

SUMMARY OF DATA - ALL COUNTRIES

	PARTICULARS UNIT	BELIZE (1)	GUYANA (2)	HAITI (3)	JAMAICA (4)	SURINAME (5)	TRINIDAD (6)	TOTAL
7.3(b) (iii)	Trade Balances S+ D- = Million US $	-.7855 (1977)	-6.92 (1978)	-507.2 (1973/74)	-36.822 (1978)	-3.92 (1978)	-46.24 (1977)	-601,887,500
7.3(c)	Total Consumption All Wood Products Million FBM	7.16 (1977)	49.6 (1975)	210 (1973/74)	29.5 (1977)	11.0 (1978)	56.7 (1978)	363,960,000
7.3	Per capita Consumption FT^3/ Annum	6.35	8	70 (90% Fire-wood)	2.5	4	8	38
8.1	Cost of Forest Service D - ST Million = US $	-.209 (1971)	-.06 (1975)	Not known	Not known	-5.04 (1975)	-3.24 (1977)	-8,549,000

DATA ON BELIZE

COUNTRY NO. 1

Collected by G.P.A. Forbes
July 1980

1. Sources

(1) Forest Department - Annual Reports
(11) The Trade Report 1977
(111) The Economic Survey 1977
(1V) Commonwealth Progress Report 1973 - 79
(V) Atlas of Belize
(V1) Unpublished Data Supplied at Discussions

2. Location

See Appendix 1 - Map of the Region

3. Area

KM^2	Sq. Miles	Ha.	Acres
22,962	8,866	2,296,200	5,674,200

4. Population

Year	No.	Density Sq. Mile	Growth Rate
1980	145,000	16	P. A. 2.9%

5. Main Products

(1) Agriculture - sugar, citrus, rice, bananas
(11) Fishing
(111) Forestry and manufactures
(1V) Marine products, clothing

6. GNP

Year	Million $ B.	$B. per capita
1969	180.8	1,300
1979	263.5	1,907

7. The Forestry Sector

7(1) The area of forested land

	Million h.a.	acres	Total land area
(a) Natural forests	1.7	4.2	74%
(b) Plantations	.28	.69	12%
(c) Other forests	.22	.54	9%
Total area of forested land	2.2	5.43	95%

(a) includes forest reserves .63 h.a.

7(2) Forest Resources

Inventory - Volumes

(a) Volumes	Average Vol. M^3/ha	Value Million ha	M^3
Present merchantable			
Hardwoods	40	1.7	68
Pine	40	.28	11.2
Other	40	.22	8.8
TOTAL		2.2	88

(b) Value - Stumpage

2,200,000 h.a. at 40 M^3/h.a. at $ 20 B

M^3 = 1,760 Million $ B

7(3) (a) Production of roundwood (logs)

Year	Ft^3	M^3	Million
1977	1.392	.04	

Sawn Production

Year	Million FBM Species Ma*	Ce*	Pi*	S*	HW*	Million Total Input Ft^3 - M^3	Million Output FBM
1962	6.7	.6	7.5	1.2	.6	2.77 - .08	16.6
1970	7.5	2.0	5	-	3.6	3.01 - .08	18.1
1975	2.9	.01	1	-	5.6	1.60 - .045	9.5
1977	1.1	.1	.9	-	3	.85 - .024	5.1
1979	← 2.8 ←		.8	.7	3.8	1.33 - .038	8.1

This was sawn by some 40 sawmills registered in 1979

Note*

Ma = Mahogany
Ce = Cedar
Pi = Pine
S = Softwoods
HW = Hardwoods

7 (3) (b) (1) Imports

'000 B $

	1968	1969
Newsprint	42	45
Plywood	76	57
Fibreboard	101	79
Paper bags	385	297
Paper pulp	293	151
Other	457	245
TOTAL	1354	874

	UNIT	1977		1978	
Sawn Lumber	FBM	000 UNIT	000 $ B	000 UNIT	000 $ B
Pine		62	169		
Cedar		1.4	22		
Mah.		31	22		
Other		106	60		
TOTAL IMPORTS		194.4	196		
Plywood	cu. ft.	121	196	102	223
Particle board	lbs.	.5	21		
Prefabs			54		
Other wood manufs.			40		
Newsprint	lbs.	4.6	187	5.14	240
Printing/Wrapping paper		2.2	180	2.33	187
Paper		2.6	151		
Fibreboard		8.6	263		
Paperboard (Non Impregnated)		5.7	580	1.9	657
Paperboard (Impregnated)			28		
Cardboard boxes		7.3	521	8.36	713
Paperboard Manufactures		1.3	236		
Wooden funniture			80		
Other - Paper			609		240
TOTALS			3,489		2,267

7(3) (b) (ii) Exports

Year	LOGS '000 FT^3	LOGS '000$ B	LUMBER '000 FBM	LUMBER '000 $B	TOTAL 000$ B
1968	9	54	-	-	54
1969	3,390	1,219	3,900	1,443	2,662
1974			4,100		
1975			3,000		
1976			2,900		
1977	62	84	1,759	1,834	1,918
1979	-	-	3,780	3,300	3,300

7(3) (b) (iii) Trade Balances

Year	Million $ B E	I	+ - S / D
1968	.054	1.354	- 1.3
1969	2.66	-	--- Not available
1977	1.918	3.489	- 1.571
1978	-	4.081	--- Not available
1979	3.3		--- Not available

7(3) (c) Consumption of Local Wood Products

Year	Million FBM LP	-FBM E	+ I FBM	=	C FBM	= -	Ft^3
1977	5.1	1.7	.2	=	3.6		.6
1979	8.1	3.8					

Total Consumption - All Wood Products

1977	Million FBM
Local production of timber	5.1
+ Import of logs, timber	.2
+ Other Imports--Newsprint etc. estimated at	1.86
- Total Consumption 1977	7.16
SURPLUS Available for Export	5.46
	+1.7

Year	Per Capita Consumption			-	PA
	FBM	=	FT^3	=	M^3
1977	38		6.35		.18

SUMMARY

		Million FBM
	Local Production	5.1
+	Imports	2.06
		7.16
-	Local Requirements	5.46
	SURPLUS to be Exported	+1.7

8 TRENDS

8.1 Cost of Forest Service

Million $B

Year	Revenue	Expenditure	S / D + -
1967	.087	.367	-.280
1970	.140	.419	-.279
1971	.095	.503	-.418

8.2 Population - Stable

8.3 GNP Rising slightly at $1,907 per capita in 1979.

8.4 Trade Balances

The balance of trade position is worsening but not, apparently, as bad as the neighbouring countries. It was fairly constant at -1.571 million $B in 1977.

DATA ON GUYANA

COUNTRY NO. 2

Collected by G.P.A. Forbes
July 1980

1. Sources

(1) Forest Department - Annual Reports
(11) Progress Report - Commonwealth Forestry Conference
(111) The Timber Resources of Guyana by I. A. Welch (ACF)
(1V) Assessment of Hidden Defects on Standing Trees during inventory work in Guyana by R. De Milde
(V) Unpublished Data Supplied at Discussions

2. Location

See Appendix 1 - Map of the Region

3. Area

Sq. Miles	Ha.	Acres
83,000	21,497,000	53,120,000

4. Population

Year	No.	Density Sq. Mile	Growth Rate
-	825,000	10	P. A. 2%

5. Main Products

(1) Bauxite products
(11) Agriculture - sugar, rice
(111) Forest Products - Greenheart logs, sawn lumber and manufactures

6. GNP

Year	Million $ G	$G per capita
1978	1,078	1,180

7. The Forestry Sector

7(1) The Area of Forested land

		Ha.	Acres	%Total Land Area
(a)	Natural forests	18,450,000	45,690,000	86%
(b)	Plantations	4,000	10,000	.2%
(c)	Total area of forested land	18,454,000	45,700,000	86.2%

(a) Mainly State owned - Tropical Rain Forest

(c) See 3

7(2) Forest Resources - Inventory - Volume

(a) Volumes	Value Average Vol. M^3/ha	Area Million ha	Gross Vol. Million M^3
Gross Volume 2200 FT^3/acre = 5430 FT^3/ha = 155 M^3/ha	155	18.4	2,852
Present exploitative Vol.	80	18.4	1,480
Present merchantable Vol.	40	18.4	740
- less defect allowance of 35%			260
Net present merchantable volume			480

(b) Value - Stumpage

18,400,000 ha at 40 M^3/ha at \$70:- GM^3 = \$ Million G51,800

7(3)(a) Production of Logs (roundwood)

Year	Million FT^3	Million M^3
1974	8.6	.25
1975	7.6	.21
1976	7.5	.21
1978	6.0	.17

Total Production - All Timber

Year	Timber	Round/Split Wood	Fuel	Million Ft^3 Charcoal	TOTAL
1974	8.6	.1	.3	.05	9.05
1975	7.6	.12	.55	.07	8.34

7(3) Sawn Production

Year	Input Million Ft^3	Output FBM (x6)
1975	5.9	35.4

The above sawn output was produced by some 74 sawmills in 1975.

7(3) (b) (i) Imports

Year		TYPE	UNIT Million lbs		Million $G
1975	(1)	Veneer, plywood	-		1.5
	(11)	Wooden boxes	4.8		3.2
	(111)	Fibreboard	1.6		.6
	(1V)	Newsprint	3.1		1.5
	(V)	Paper board	7.1		7.0
	(V1)	Paper manufactures	6.8		8.6
	(V11)	Other	-		1.5
				TOTAL	23.9
1976	(1V)				3.9
	(V)				7.4
	(V1)				7.3

7(3) (b) (ii) Exports

Year		Ft^3	Million $G
1975	logs	1.01	2.8
	sawn lumber	.5	5.5
	other		1.8
		TOTAL	10.1

7(3) (b) (iii) Trade Balances

Year	Million $G I	E	S+ / D-
1975	23.9	10.1	-13.8
1976	24.8	10.9	-13.9
1978			-17.3

Code I - Import
E - Export
S - Surplus
D - Deficit

7(3) (c) Consumption of Local Wood Products

Year	Million LP FBM	- E FBM	+ I FBM	=	C FBM	=	Million Ft^3
1975	45.6	9.06	-	=	36.54	=	6.09
1978	36.0						

7(3) (c) Total Consumption - All Wood Products

	Million FBM
Local production timber (1976)	45.6
+ Imports - logs, timber	-
+ Other Imports--Newsprint etc. estimated at	4.0
	49.6
- Exports	9.6
Total Consumption Requirements	40.0

Year	Per Capita Consumption FBM	=	FT^3	-	Per annum M^3
1975	48	=	8		.22

SUMMARY

	Million FBM
Local Production	45.6
+ Imports	4.0
	49.6
- Local Requirements	40.6
SURPLUS to be Exported	+ 9.6

8 TRENDS

8.1 Cost of Forest Service

Year	R	E	Million $G + S / - D
1970	.49	.4	+.09
1975	.43	.58	-.15

8.2 Population - Stable

8.3 GNP Consistently low at $1,180 G. per capita in 1978.

8.4 Trade Balances

Steadily declined to -17.3 Million $G in 1978. See 8.4 in the Trinidad data report. The difference is simply that Guyana does not have petroleum or like products to buffer the effects of inflation. The data available is scanty, but the trend indicates that the balance of trade position on wood products is worsening as the import prices rise more sharply than the export prices.

DATA ON HAITI

COUNTRY NO. 3

Collected by G.P.A. Forbes
July 1980

1. Sources

(1) Statistiques des Produits Forestiers 1949-1974

(11) Current Economic Position and Prospects for Haiti - Report 2165

(111) Evolution of the Forests of Haiti

(1V) 1976 FAO Yearbook of Forest Products

(V) Unpublished Data Supplied at Discussions

2. Location

See Appendix 1 - Map of the Region

3. Area

KM^2	Sq. Miles	Ha	Acres
27,700	10,714	2,775,000	6,856,960

4. Population

Year	No.	Density Sq.Mile	Growth Rate p.a.
1976	4,700,000	438	1.45%
1978	5,000,000	466	-

5. Main Products

(1) Agriculture - coffee, sugar, rice

(11) Bauxite

(111) Manufactured products

6. GNP

Year	$Million Gourdes	$ per capita
1977	2,061	412

Haiti is rated amongst the 30 poorest countries in the world.

7. The Forestry Sector

It is reported that there is a wealth of timber in the forested mountains - mainly mahogany, pine and logwood.

7(1) The Area of forested land

	Ha	Million acres	%Total land area
(a) Natural high forest	.25	.617	9%
(b) Other forests, low, sparse	1.00	2.471	36%
Total area of forested land	1.25	3.088	45%

7(2) Forest Resources

Inventory - Volumes

(a) Volumes	Av. Vol. M^3 /Ha	Million Ha	M^3
Present merchantable 10% and fuel 90%			
(i) good high forest	140	.12	48
(ii) poor high forest	120	.13	26
(iii) good low forest	120	.34	68
(iv) poor low forest	110	.66	66
Total		1.25	208

(iii) and (iv) xeroplytic scrub

NOTE

The population pressure for FIREWOOD makes all wood merchantable. However, only 10% is TIMBER merchantable.

(b) Value - Stumpage

20.8 million M^3 @ $10 US M^3 = 2,080 $ Million US

= 10,400 G's.

7(3) (a) Production of roundwood (logs) etc.

Year	Ft^3	M^3 Million
1969/70	196	5.56
1973/74	220	6.16
1976	273	7.75

7(3) Sawn Production

Not known, but estimated at 6,000.000 FBM

7(3) (b) (1) Imports

Year		Q '000 KG	V G
Timber	1969/70	62	890
	1973/74	73	3,230
	1976	-	-
Paper Products			
	1969/70	1,614	2,350
	1973/74	2,374	3,840
	1976	-	5,690

7(3) (b) (11) Exports

Year		Q '000 KG	G
Timber	1969/70	812	3,908
	1973/74	3,417	4,534

7(3) (b) (111) Trade Balances

Year	Million G E	I	+ S / - D
1969/70	3,908	3,240	+668
1973/74	4,534	7,070	-2,536

7(3) (c) Total Consumption of All Wood Products

1973/74	Million M^3
Local production of timber including	
firewood (90%)	6.16
Add Imports	3.947
	10.107
Less Exports	.007
Local Consumption	10.1

Year	Per Capita Consumption FBM	=	FT^3	=	M^3
1973/74	420		70		2

This consists of	FBM	= FT^3	= M^3
10% Timber	42	7	.2
and			
90% Fuel	378	63	1.8

SUMMARY

	Million M^3
Local Production	6.16
Add Imports	3.947
	10.107
Less Exports	.007
Local Consumption	10.1

8 TRENDS

8.1 Cost of Forest Service

Not Known

8.2 Population - Stable

8.3 GNP Rising and at 412 Gourdes per capita in 1977 ($82 US).

8.4 Trade Balances

The balance of trade position on wood products is worsening and was at -2536 million Gourdes ($507 million US) in 1973/74.

DATA ON JAMAICA

COUNTRY NO. 4

Collected by G.P.A. Forbes
July 1980

1. Sources

(1) Statistical Yearbook of Jamaica 1979
(11) External Trade 1978
(111) National Income Product 1978
(1V) Draft Ministry Paper 1978-79
(V) Forestry Department Review 1972-80
(V1) Unpublished data supplied at Discussions

2. Location

See Appendix 1 - Map of the Region

3. Area

KM^2	Sq. Miles	Ha	Acres
10,990	4,243	1,098,955	2,715,520

4. Population

Year	No.	Density Sq. Mile	Growth Rate
1970	1,848,500	435	1.5%
1978	2,123,000 (estimate)	500	-

5. Main Products

(1) Agriculture - sugar, citrus, bananas
(11) Mining - bauxite
(111) Fishing
(1V) Forestry and Manufactures
(V) Tourism
(V1) Manufactures

6. GNP

Year	Million $ J	$J per capita
1972	2,605	1,410
1975	5,426	2,572
1978	7,413	3,492

7. The Forestry Sector

7(1) The Area of Forested Land

		'000 Ha	Acres	%Total Land area
(a)	Natural forests	246	608	22%
(b)	Plantations (Pines)	7	17	1.5%
(c)	Other Hardwood forests	12	30	.5
(d)	Total area of forested land	265	655	24.0%

(d) of which state forests = 247,000 acres

7(2) Forest Resources - Inventory - Volumes

(a) Volume

		Av. M^3/Ha Vol.	'000Ha	Value Million M^3
(a)	Natural Forest	40	246	9.84
(b)	Plantations	40	7	.28
(c)	Other Hardwoods	140	12	1.68
	TOTAL		265	11.80

(b) Value - Stumpage

11.8 million M^3 @ $40J M^3 = $472 Million J

7(3) (a) Production of Logs (roundwood)

Year	FT^3	Million M^3
1979	1.8	.052

7(3) Sawn Production

Year	Input FT^3	-	M^3	Million Output FBM
1979	1.8	-	.052	10

This wood was sawn by some 70 sawmills registered in 1979.

Species - Pinus Caribea 10%

Hardwoods - cedar, mahogany

- 20/30 mixed species

7(3) (b) (i) Imports

Wood and Paper Products

Year	'000J$
1972	17,900
1975	35,500
1978	70,000

1978	'000$J
Wood - logs, squared	700
Sleepers	300
Sawn	11,000
GH/Mahogany	2,500
Plywood	2,500
Newsprint, Kraft paper	30,000
Cardboard	7,000
Other paper manufacture	16,000
TOTAL	70,000

7(3) (b) (ii) Exports

Year	'000$J
1978	
Fuelwood	8
Coal	15
Paper manufactures	530
Boxes	1,300
Other	3,547
TOTAL	5,400

7(3) (b) (iii) Trade Balances

Million $J

Year	E	I	+ S / - D
1972	3	17.9	-14.9
1975	4	35.5	-31.5
1978	5.4	70	-64.6

7(3) (c) Consumption of Local Wood Products

Year	Million FBM LP	-E	+I	=	C FBM	=	FT^3
1978/79	10	.5	+10	=	19.5	=	3.3

7(3) (c) Total Consumption - All Wood Products

	Million FBM
Local Production of timber (1977)	10
+ Imports of logs, wood	10
+ Other Imports, Newsprint etc.	10
	30
- Exports	.5
Local Consumption	29.5

Per Capita Consumption - Per Annum

Year	FBM	=	FT^3	=	M^3
1977	15	=	2.5	=	.07

SUMMARY

	Million FBM
Local Requirements	29.5
- Local Production	10
DEFICIT to be Imported	19.5

8 TRENDS

8.1 Cost of the Forest Service

Year	Revenue	Expenditure	+ - S/D	'000$J
1978/79	544			
1977/78	218			

It is assumed that Revenue exceeds Expenditure in Jamaica, and is likely to increase in the future.

8.2 Population - Stable

8.3 GNP Rising gradually to $3,492 per capita in 1978

8.4 Trade Balances

on wood products declined to an all time deficit of -64.6 million $J in 1978.

DATA ON SURINAME

COUNTRY NO. 5

Collected by G.P.A. Forbes
June 1980

1. Sources

   (1) Suriname Progress Report 1980 - Prepared by the Forest Department for the Latin American Commission

   (11) Unpublished data supplied at discussions

   NOTE

   The collection of data was not easy. It was not possible to get an old Annual Report of the Forest Department.

   The fitting together of data, of various degrees of relativity, from various sources was like putting together a jig-saw puzzle. The best fit is given below.

2. Location

   See Appendix 1 - Map of the region

3. Area

Sq. Miles	Hectares	Acres
70,000	16,100,000	44,000,000

4. Population

No.	Density Sq. Mile
400,000	6

5. Main Products

   (1) Bauxite

   (11) Agriculture - sugar, dairy, citrus

   (111) Forestry and wood processing

6. GNP

Year	GDP (at factor cost) Million Sf.	Sf. per capita income p.a.
1977	1,139,300	2,848

7. The Forestry Sector

7(1) The Area of Forested Land

		Million h.a.	Million acres	% Total land area
(a)	Dry natural high forest	12.6	29.6	70%
(b)	Savannah	1.0	2.47	5%
(c)	Plantations (P.C.)	.03	.07	.15%
(d)	Other	3.5	8.64	18%
	Total area of forested land	17.13	40.78	93.15%

7(2) Forest Resources — Inventory - Volumes

		Average Vol. M^3/ha	Million ha	Value Million M^3
(a)	Volumes			
	Present merchantable species			
(a)	Dry high forests	50	12.6	630
(b)	Savannah	20	1.0	20
(c)	Plantations (P.C.)	40	.03	1.2
(d)	Other	12	3.5	42
	TOTAL		17.13	693.2
	less defect 35%			243.2
	Net Merchantable Volume			450.0

(b) Value - stumpage

17,130,000 ha @ 40m^3/ha @ \$60 Sfm^3 = Sf 41,112 million

7(3) (a) Production of roundwood (logs)

Year	Million M^3
1974	.23
1975	.24
1976	.19
1977	.25
1978	.26
1979	.36

7(3) Sawn Production

Year	Input M^3	M^3	Million Output =	FBM
1970	.265	.138	=	4.8
1978	.260	.130	=	4.5
1979	.360			

This production was by some 30 sawmills in 1979.

7(3) (b) (1) Imports

	Million FBM
1978/1979 Newsprint etc. estimated at 5 per capita	2.0

7(3) (b) (11) Exports

	1970 Q '000 M^3	1970 V '000Sf	1979 Q '000 M^3	1979 V '000Sf
Roundwood	12.8	330	4.8	202
Hewnwood	11.9	834	9.8	1,649
Plywood	11.9	4,026	12.9	8,196
Particle Board	11.4	1,350	4.4	1,412
Sleepers	-	-	3	475
Firewood	-	-	-	-
Sawn	5.8	1,394	16.3	7,421
TOTALS	48.8	7,934	51.2	19,385

7(3) (b) (111) Trade Balances

Year	Million St. E	I	+ S / D -	
1978/1979	19	12	-7	Guess Estimates

7(3) (c) Consumption of Local Wood Products

Year	Million LP FBM	-E FBM	+I FBM	=	C FBM	=	FT^3 -
1978/1979	9.0	1.8	-	=	7.2	=	1.2

Total Consumption - All Wood Products

1978/1979	Million FBM
Local Production of timber	9.0
+ Imports	-
+ Imports - Newsprint, etc. estimated at	2.0
	11.0
- Exports	1.8
TOTAL Consumption Requirements	9.2

(7) (3) Per Capita Consumption - PA

Year	FBM	FT^3	M^3
1978/1979	23	4	.11

SUMMARY

		Million FBM
	Local Production	9.0
+	Imports	2.0
		11.0
-	Local Requirements	9.2
	SURPLUS to be Exported	+ 1.8

8 TRENDS

8.1 Cost of Forest Service

Million Sf

Year	Revenue	Expenditure*	S/D
1969	.133		
1975		9.2	-9
1979		8.6	

*Includes Netherlands Aid fund.

8.2 Population - stable

8.3 GNP At Sf 2,848 for 1977

8.4 Trade Balances

Negative -7 million Sf in 1978-1979, but not as bad as most.

DATA ON TRINIDAD AND TOBAGO

COUNTRY NO. 6

Collected by G.P.A. Forbes
June 1980

1. Sources

(1) Forest Department Annual Reports

(11) Progress Reports for Commonwealth Forestry Conferences and the Latin American Forestry Commission

(111) The FRIM 1980 Inventory Report - Forest Department and CIDA

(1V) The Natural Resources of Trinidad and Tobago, editor St. George Cooper, pub. Bacon

(V) UNIDO 1974 Report on paper and pulp in CARICOM

(V1) Unpublished Data supplied at discussions

2. Location

See Appendix 1 - Map of the Region

3. Area

Sq. Miles	Ha.	Acres
1,980	512,560	1,267,000

4. Population

Year	No.	Density Sq. Mile
1980 - Census in progress	1,180,000 (estimate)	595

5. Main Products

(1) Petroleum and Asphalt - 70% GNP

(11) Agriculture - sugar, cocoa, citrus

(111) Forestry and Wood Processing - minor

6. GNP

Year	Million $ TT	$TT per capita income, P.A.
1972	1,906	1,900
1978	8,051	8,000

7. The Forestry Sector

7(1) The Area of Forested Land

	Ha	Acres	%Total Land area
(a) Forest Reserves	144,300	356,500	28%

(b)	Other State lands	111,300	275,000	21%
(c)	Private lands	53,400	132,000	11%
(d)	TOTAL Area of Forested Land	309,000	763,500	60%

(a) Mainly natural Primary forest - High

(b) Mainly natural Secondary forest - low

(d) See 3

7(2) Forest Resources - Inventory - Volume

Value

(a) Volumes	Average Vol. M^3/ha	Area '000 ha	Gross Vol. Million M^3
Gross Volume	85		
Present exploitable Vol.	64		
Present merchantable Vol.	40	310	12.6

(b) Value - Stumpage

310,000 ha @ 40 M^3 /ha @ $35 TT M^3 = Million TT434

7(3) (a) Production of Logs (roundwood)

Year	FT^3	Million	M^3
1969	2.2		.06
1977	3.3		.09

It was observed that GUYANA supplied logs to Suriname since 1953, and to China from 1971 and Cuba from 1972. In view of this, the shipment of logs to Trinidad should be a relatively minor problem.

7(3) Sawn Production

Year	Input Million Ft^3	Input Million M^3	Output FBM
1974	2.3	.066	17.3
1977*	2.5	.07	21

Produced by some 63 sawmills - operate with an insufficient log supply.

7(3) (b) (i) Imports

Year	Type	Unit Million	Units	Million $TT
1976	Sawn lumber	FBM	24	23.9
1977	"	'000	54	38.9
1967	Newsprint	cwt.	107	1.5
1972	"		139	2.7
1967	Writing paper	"	49	1.6
1972	"	"	62	3.0
1967	Cardboard	"	14	.4
1972	"	"	10	.3
1967	Building board (Non impregnated)	"	53	.6
1972	"	"	73	1.3
1967	Building board (Impregnated)	"	25	1.5
1972	"	"	98	4.0
1967	Packing and wrapping paper	"	29	.8
1972	"	"	80	1.8
1976	All paper products	"	760	62.6
1977	"	"	740	115.0

7(3) (b) (ii) Exports ALMOST NIL

7(3) (b) (iii) Trade Balances

Year	Million $TT I	E	+ S / D -
1954	13.7	.4	-13.3
1974			-65.7
1977			-115.6

Code I- Import
E- Export
S- Surplus
D- Deficit

7(3) (c) Consumption of Local Wood Products

Year	Million FBM LP	FBM -E	FBM +I	=	C FBM	Ft^3
1974	17.3	-	14.7	=	32 =	5.4
1978	18	-	32.7	=	50.7=	8.45

Code LP- Local production
I - Imports
E - Exports
C - Consumption

7(3) (c) Total Consumption - All Wood Products

	Million FBM
Local production timber (1978)	18
+ Imports - logs, timber	32.7
+ Other Imports - Newsprint, etc. estimated at	6.0
	56.7
Exports	-
Total Consumption Requirements	56.7

Year	Per Capita Consumption - Per annum		
	FBM	FT^3	M^3
	=		=
1978	48	8.	.22

SUMMARY

	Million FBM
Local Requirements	56.7
Local Production	18.0
DEFICIT to be Imported	38.7

8 TRENDS

8.1 Cost of Forest Service

Code
R - Revenue
E - Expenditure
S - Surplus
D - Deficit

Year	Million $TT R	E	D / S
1954	.414	.55	-.136
1977	.985	9.096	-8.111
1979		11.495	

Expenditure far exceeds Revenue

8.2 Population - stable

8.3 GNP High for the region, and dominated by Petroleum which accounts for 70% of the GNP.

8.4 Trade Balances

The deficit reached an all time high of (-115.6 million $TT) in 1977. It would appear as if the value of imports

have been increasing at a faster rate than the value of exports, e.g.:

Newsprint	Q '000 cwt	Million $TT
1967	107	1.5
1972	139	2.7

In effect, this amounts to price adjustments over which Trinidad and Tobago has no control for products which it

(a) does not yet produce, and

(b) cannot find a substitute for, and

(c) cannot, apparently, do without.

The inflationary effect is very similar to that of OIL PRICES, and affects both IMPORTS and EXPORTS adversely, in that

(a) for <u>imports</u> - the more one pays the less one seems to get in return, and

(b) for <u>exports</u> - the more one exports the less one seems to get in return.

Trinidad and Tobago are fortunate in that the rising cost of IMPORTS can be offset against the rising petroleum prices which it exports. In 1977, the petroleum prices had to make good, in Trinidad,

	$ Million TT
(a) the cost of the forest service	8.111
(b) the trade deficit on timber products - see 7.3(b) (iii)	115.6
Total Deficit (1977)	123.711

APPENDIX 3

Conversion Factors

AREA

1 acre	=	4047 sq. meters	or	.4047 hectares
1 hectare	=	10,000 sq. meters	or	2.471 acres
1 sq. mile	=	640 acres	or	259 hectares

VOLUMES

1 cubic meter (M^3) = 35.31 cubic feet (FT^3) or 423.73 FBM

1 cubic foot (FT^3) = 6 foot board measure (FBM) (50% loss on conversion)

1 FT^3 (round) = 1 FT^3 HOPPUS x $\frac{5}{4}$

MONEY

				$US
$1B	-	Belize $	=	.5
$1G	-	Guyana $	=	.4
1G	-	Haiti Gourde	=	.2
$1J	-	Jamaica $	=	.57
1fs	-	Suriname	=	.56
$1TT	-	Trinidad and Tobago	=	.4

HEAT

1FT^3 Hardwood = 7,000 - 9,000 British Thermal Units (BTU)

APPENDIX 4

List of Persons with whom Discussions were Held

1. BELIZE

	Name	Position	Location
(1)	Mr. Oscar Rosado	Chief Forestry Officer	Belmopan
(11)	Mr. Hugh Mc Cain	Chief of the Planning Unit Ministry of Finance and Economic Development	Belmopan
(111)	Mr. Thomas Chatterjee	UN Energy Expert	Belmopan
(1V)	Mr. Angus Duncan	General Manager The Belize Estate and Produce Co. Ltd.	Belize City

2. GUYANA

(1)	Honourable Herbert Jack	Minister for Energy and Natural Resources	Georgetown
(11)	Cde. Cecil Hepburn	General Manager Guyana Timber Export Board	Georgetown
(111)	Cde. David Persram	Conservator of Forests Guyana Forestry Commission	Georgetown
(1V)	Cde. Carlton Collins	General Manager Guyana Timbers Ltd.	Georgetown
(V)	Cde. Toolsie Persaud	General Manager Toolsie Persaud Ltd.	Georgetown
(V1)	Cde. John Willens	General Manager Willens Timber and Trading Co. Ltd.	Georgetown
(V11)	Mr. Nagasar Sawn	General Manager Nagasar Sawn Ltd.	Georgetown
(V111)	Dr. Walcott	Institute of Applied Science and Technology	Georgetown

3.	HAITI			
	(1)	Mr. Michel Bonnet	Conadep	Port au Prince
	(11)	Mr. Emile Toussaint	Planning	Port au Prince
	(111)	Mr. Leonie Edouard	Director, Natural Resources, Agriculture Department	Damiens
	(1V)	Mr. Lucien Brisson	Chief, Forest Service	Damiens
	(V)	Mr. Yves Gueruy	Councillor, Natural Resources	Damiens
	(V1)	Mr. Gerard Lohier	Director, Programming, Agriculture Department	Damiens
	(V11)	Mr. Thercius Preval	Private Timber Concessonarie	Port au Prince
4.	JAMAICA			
	(1)	Mr. Keats Hall	Managing Director FID Co. Ltd.	Kingston
	(11)	Mr. Roy Jones	Director, Forestry Department	Kingston
5.	SURINAME			
	(1)	Mr. Ong A. Lak	Minister for General and Foreign Affairs	Paramaribo
	(11)	Mr. Adrian Vink	Deputy Conservator of Forests	Paramaribo
	(111)	Mr. Jait Oemrawsingh	General Manager Hion	Paramaribo
	(1V)	Mr. John Lenne	Technical Director Suriname Timbers	Paramaribo
	(V)	Mr. Tony Raeymann	Sales, Marketing Bruynzeel	Paramaribo
	(V1)	Mr. Eddy Luca	Production Manager Bruynzeel	Paramaribo

6. TRINIDAD

During 1979-80, many discussions were held with various members of the Forest Department, other government departments, and persons engaged in the timber trade.