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# Central America Regional Transportation Study

## Summary Report

June 1987

Parsons Brinckerhoff • 100 YEARS

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Regional Office for Central America and Panama
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# CENTRAL AMERICA

# REGIONAL TRANSPORTATION STUDY

## SUMMARY REPORT

FINAL REPORT
JUNE 1987

USAID/ROCAP

PARSONS BRINCKERHOFF
INTERNATIONAL, INC.

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# THE CENTRAL AMERICAN REGIONAL

# TRANSPORTATION STUDY

# SUMMARY REPORT

## INTRODUCTION

In the period October through December 1986, a team of engineers and economists from Parsons Brinckerhoff International visited the countries of Central America to evaluate and report on the status of transportation. The investigation was sponsored by the United States Agency for International Development (USAID) through the Regional Office for Central America and Panama (ROCAP).

The focus of the study was to determine the transportation-related constraints to the export of non-traditional products from the countries of the region and to recognize means of removing these constraints. Traditional products were defined as bananas, coffee, sugar, and meat, though this definition was amended according to the circumstances of each country.

It was intended that the study would make recommendations that would assist USAID and ROCAP in formulating specific national or regional programs to assist exports from the non- traditional sector. The programs were to be capable of being implemented in the short term--five years.

The project was divided into three phases: a first phase of data-gathering in the USA, a second phase of data gathering and interviews in Central America and the USA, and a third phase of analysis and report production in the USA. Much of the data-gathering in the countries of Central America took the form

of interviews with exporters of non-traditional products, representatives of carriers, and national policy makers at all levels. The results of the study are contained in seven separate reports: one report for each of the countries of Belize, Guatemala, Honduras, El Salvador, Costa Rica, and Panama, and one report for the region as a whole. Nicaragua was specifically excluded from the study.

The conclusions and recommendations of the draft reports were presented to the Director of ROCAP and bilateral USAID mission directors on March 11, 1987 in Guatemala City.

## NON-TRADITIONAL PRODUCTS

Non-traditional exports from the countries of Central America are typically agricultural products and fish and crustacea. In overall terms, non-traditional products account for 40 percent of all exports, but the range varied from 30 percent in El Salvador to 63 percent in Panama. The value of all non-traditional exports from the countries of the region was US$1.6 billion (Table 2).

Of the agriculture and mariculture exports, the main exports were the fresh or frozen varieties. Both of these require specialized transportation systems. Where the market price was sufficiently high, as in the case of fresh shrimps and lobsters, the preferred form of transportation was air freight, but for the majority of the fresh produce the only economical method of transportation was ocean freight.

A part of the total export of non-traditional products was in the form of processed or semi-processed foods or manufactured items. While the value of these exports was typically of the order of 50 percent of all non-traditional exports, the volume in terms of tonnage was typically less than 10 percent. The greatest demand on the transportation system was generated by typical

agricultural products of low value: products such as fruits and vegetables which accounted transportation costs as high as 50 percent (Table 3) of the sale price, and which were extremely sensitive to the cost of transportation.

**Table 1**
**Central America**
**Principal Exports by Country**
**1985**
(US$ million)

| | Guatemala | Honduras | El Salvador | Belize | Costa Rica | Panama |
|---|---|---|---|---|---|---|
| Coffee | 323.5 | 185.0 | 452.6 | - | 308.3 | 12.9 |
| Cotton | 59.5 | 6.8 | 24.4 | - | - | - |
| Bananas | 42.8 | 273.5 | - | 3.2 | 189.4 | 74.7 |
| Cardamom | 50.6 | - | - | - | - | - |
| Meat | 73.8 | 18.2 | 1.7 | 0.2 | 56.2 | 1.5 |
| Citrus | - | - | - | 12.1 | 0.2 | - |
| Sugar | 33.3 | 21.4 | 29.3 | 22.9 | 5.1 | 35.0 |
| Seafood | 7.4 | 40.9 | 9.2 | 6.8 | 27.6 | 57.8 |
| Garments | 2.6 | 0.7 | 8.0 | 15.7 | 8.1 | 9.3 |
| Ref. Petroleum | 8.5 | 5.9 | 4.5 | - | 3.9 | 19.9 |
| TOTAL (Including Others) | 1059.7 | 780.0 | 678.8 | 64.4 | 930.0 | 256.3 |

Source: The Economist Intelligence Unit, Central Banks

Aggregating the above values to give the major exports from the region as a whole produces the following table, where the percentage contribution of each item to the total is also shown:

Table 2
Central America
Non-Traditional Exports
1985
(US$ million)

| | Total Exports | Traditional Exports | Non-Traditional Exports |
|---|---|---|---|
| Guatemala | 1039.7 | | |
| Honduras | 780.0 | | |
| El Salvador | 678.8 | | |
| Belize | 64.4 | | |
| Costa Rica | 930 | | |
| Panama | 256.3 | | |
| TOTAL | 3769.2 | | |
| Coffee | | 1282.1 | |
| Bananas | | 583.6 | |
| Sugar | | 147.0 | |
| Cotton | | 90.7 | |
| Meat | | 151.6 | |
| Ref. Petrol. | | 28.4 | |
| TOTAL | | 2283.4 | |
| GRAND TOTALS f.o.b. | 3769.2 | 2283.4 | 1485.8 |
| PERCENT | 100 | 61 | 39 |

The main trading partner for the non-traditional products from the region was the USA, accounting for well over 50 percent of export value. The markets of Western Europe accounted for about 25 percent of export values, mostly resulting from commerce related to cultivation of flowers, live plants, and seeds. Less than 20 percent of any country's trade was with its neighbors in the region.

Non-traditional agricultural exports from the countries of Central America, with few exceptions, were those that created a need for a sophisticated yet cheap transportation link from the production area to the market to be economically feasible. The problems of transportation stemmed from the conflict between producers, who wished to take advantage of the relative ease and cheapness of producing agricultural commodities in the region, and carriers, who were faced with the relative difficulty and high cost of getting the products to market in good condition.

## THE TRANSPORTATION SYSTEM

All produce destined for export from the countries of Central America is carried by truck for some part of the journey, and about 17% by value is trucked in intra-regional trade. Second in importance to trucking is maritime transport, as well over 80% of the region's non-traditional exports leave the area by sea. Approximately 3% leaves the area by air.

### Road

At the time of the study the road network throughout Central America was well-established in terms of there being interconnections between main production areas and the major transportation terminals. A significantly high percentage of the road system was unpaved, and all roads, paved or unpaved, had received less than adequate levels of maintenance.

**Table 3**
**Central America**
**Typical Export**
**Total Cost Profile**
**of Non-Traditional Products**

| | Percent | Value US$ Million |
|---|---|---|
| Production Cost | 33-48% | 1,557.6 |
| Transport Cost | 35-40% | 1,343.43 |
| Land | 5- 6% | 214.17 |
| Port C.A. | 3- 8% | 214.17 |
| Freight | 15-18% | 642.51 |
| Port USA | 6- 7% | 258.11 |
| Admin. Costs | 2- 4% | 116.82 |
| Margin | 20-25% | 876.15 |
| TOTAL C.I.F. | 100% | $3,894.00 |

It was determined that trucking costs were high in some of the countries, and had reached that level because of factors such as the poor road conditions, relatively long distances high import duties on new equipment and spare parts, poor driving practices, and in many cases the absence of adequate competition. The geographical features of the region, however, with high mountains and steep valleys, would always contribute to a relatively high road transport cost, and would make road construction and repair costly activities.

The trucking of goods to the USA was determined to be both feasible and potentially economical. The countries in the north of the region were at a particular advantage, and could reach midwest markets by road cheaper than by sea. However, frontier delays and protectionist trucking regulations served to limit the effectiveness of this option.

## Rail

The railroad system in the region mainly served the traditional exports, chiefly the bananas. Exporters of non-traditional products were reluctant to entrust their product to the rail companies because of the unacceptable time taken to make the journey to the port and the lack of liability assumed by the rail company. With the exception of abandoned connections between El Salvador and Guatemala, there are no significant inter-national rail connections.

## Air

All countries in the region have at least one international airport. These airports are served mainly by passenger carriers, with a limited amount of air freight service offered by specialist companies. Most air freight in the region is carried in the hold of passenger aircraft destined for Miami. Conflicts constantly arise over the limited amount of this space, particularly during peaks in passenger demand. Facilities at airports are basic but adequate, though a failure at most locations is the provision of cold storage facilities for perishable cargo, or even the provision of shade from the sun. The new airport at San Salvador is an exception in this regard; it was found that all countries except Panama had excess demand for air freight over the space that was actually available. In general, the potential for increased air freight exports was not taken advantage of because of a lack of collaboration, and political interference in the air transport mode.

**Sea**

All countries in the region have ports which are regularly served by major maritime carriers. Port activity is concentrated along the Atlantic coast, as a result of the USA and Europe being the main trading partners. Ports along the Pacific coast - some of very recent construction - are largely underutilized.

A major proportion of the cost of transportation of non-traditional products was associated with the maritime portion - over 50% of total transportation cost in some cases. It was not found that any individual countries were more favored than others in this respect, but because of different combinations of port efficiencies, competition, tariff levels and port tariff structures, the composition of the total cost differed considerably. At Puerto Limón, for example, while operating efficiencies were high, justifying low sea freight charges, they were more than offset by the high port charges, and the net result was an expensive port; at Santo Tomás in Guatemala, on the other hand, port user charges were low, but port operating inefficiencies and lack of adequately-maintained equipment mandated a higher-than-usual charge from the liner operators.

With two notable exceptions, all countries had port facilities on both the Atlantic and the Pacific. While Belize, had no Pacific outlet, El Salvador typically used Santo Tomás in Guatemala for its products destined for the Gulf and Europe. No particular inconvenience was experienced by Belize, but the economy of El Salvador was critically dependent on maintaining the connection to Santo Tomás, since a large proportion of its non-traditional exports left by this port. As a result of the long land transport leg, exports via Guatemala from El Salvador were the most costly in the region.

**CONCLUSIONS**

It was determined that the costs of transportation in the countries in the region were relatively high, and as such they constituted a significant impediment to increased export of non-traditional products. The main sources of high transportation costs were:-

- a failure on the part of producers to combine their activities to take advantage of economies of scale in transportation

- a failure on the part of producers, either individually or in groups, to contract for transportation services well in advance of requirements

- in most ports, though not all, a poor standard of mainentance and repair of equipment led to expensive delays and down-time in unloading and loading vessels.

- throughout the region, the condition of rural roads was inadequate for the heavy equipment that was required to transport the majority of the exports

- in Guatemala and Costa Rica the poor condition of the main highway to the major port was contributing to the high cost of trucking

- in Belize the main impediment to increased exports was inadequate access to new areas for development

- the existing efficiency of operations at Santo Tomás in Guatemala is such that any programmed increase in exports through this facility will be seriously handicapped and may become prohibitively expensive

- considering that containerization is increasingly the most favored method of unitization in exports, the countries lack the network of consolidation depots (container freight stations) necessary to make the system operate economically

- considering that all fresh agricultural produce requires constant temperature transportation and initial cooling at harvest, the absence of adequate cooling facilities throughout production areas throws an undue, and expensive, burden on the providers of refrigerated containers.

## RECOMMENDATIONS

The following recommendations are summarized from the six country reports and the regional report. Reference should be made to these volumes for further details regarding the recommendations, their costs and their benefits.

### Institutional Recommendations

1. Contract law amendments that will enable contracts to be simply entered into, enforced and cheaply resolved, specifically:-

- o simple contracts of carriage to enable shipper and carrier to be equally bound regarding time, price and quantity

- o legally responsible exporters' groups that can negotiate on behalf of and can bind all members

- o legal framework for transportation broker operations to allow introduction of individuals who make a living from economies of scale.

2. Representation overseas for each country, or for the region as a whole, that will have the function of:-

   - o certifying condition of perishable products arriving at US ports, principally Miami

   - o undertake detailed marketing studies to locate new markets for existing products and to determine opportunities for potential products

   - o train Central American nationals in the business of exporting with a view to their returning and acting as brokers within their own countries.

3. Education programs for a number of groups involved in the export process, including:-

   - o training for truck drivers

   - o training for truck mechanics

   - o seminars for managers of trucking companies

   - o assistance with group problem-solving techniques.

4. Increased number of USDA and US Customs inspectors at US ports, or create increased service of pre-inspection within each country. This latter course has the added advantage of training Central American nationals in USDA and customs procedures.

Other institutional recommendations included the introduction of simplified customs procedures at frontiers, standardized trucking regulations, port charges revisions, port tariff structure revisions, removal of unnecessary charges and duties, revision of efficiency of existing export incentives, and removal of errors and inconsistencies in applications of port tariffs.

**Physical Recommendations**

1. Purchase of additional equipment and structures required to alleviate the bottleneck at Santo Tomás in Guatemala. Estimated cost $3 million.

2. Institute improved maintenance and repair procedures for the major ports in the region. The intent is to make better use of available equipment and in so doing improve port efficiencies. A study phase will survey existing equipment, its condition, and needs for workshop equipment; a procurement contract will provide what is needed for improved maintenance; and a training program will instruct operators in improved practices.

3. Improve the condition of rural roads, both through improved design and through improved maintenance. A two-pronged study would review design standards and conditions of rural roads, and review current maintenance

equipment, personnel, and procedures. The major effort would be to make all roads passable in all weather and to improve the general standard of the running surface to minimize damage to trucks and contents.

4. Construct strategically-located facilities for the consolidation of container freight (container freight stations). As a preliminary stage, one such facility should be located in the vicinity of each major port, though where sufficient demand could be demonstrated, an additional facility close to the capital city should be considered. An approximate cost of a typical fully-equipped facility would be $1.2 million. Ideally, the operation should be a private sector function, though government assistance may be required with the financing.

5. Construct adequate post-harvest cooling facilities or appropriate refrigerated warehouses. Though not strictly a transport item, it was found that the absence of such facilities was seriously escalating the cost of transportation of perishable products. The specifications for these facilities would be determined from an agricultural demand study, but each unit would cost of the order of $1.8 million.

Other physical recommendations included detailed reviews of freight facilities available at airports, improvements to traffic circulation in ports, reconstruction of deteriorated major highways, procurement of equipment for Puerto Quetzal (Guatemala), and remedial works at port Belize. Also recommended was the continued program for farm and feeder roads in Belize.

The study concluded that much could be done on a regional basis to reduce the cost of non-traditional exports - standardized trucking regulations, standardized port charges, streamlined customs procedures at frontiers, removal of restrictive trucking

practices, etc - there being considerable economies to be made in treating the area as one unit. However, more priority was given to country recommendations, particularly in the short term, as regional programs had exhibited a tendency to be slower in their implementation than national programs.

# CENTRAL AMERICA

# REGIONAL TRANSPORTATION STUDY

## SUMMARY OF PRIORITIZED RECOMMENDATIONS

FINAL REPORT
JUNE 1987

USAID/ROCAP

PARSONS BRINCKERHOFF
INTERNATIONAL, INC.

CENTRAL AMERICA

REGIONAL TRANSPORTATION STUDY

SUMMARY OF PRIORITIZED
RECOMMENDATIONS

## PHYSICAL RECOMMENDATIONS

### Regional

1. Port Equipment for Santo Tomas
   Approximate cost: $3 million
   Approximate benefit: $28 million increased sales
   Time frame: by 1990

2. Regional Review of Cross-border Roads
   Approximate cost: $750,000 (study only)
   Approximate benefit: $12 million increased sales
   Time frame: study 1988
   implementation & procurement 1989-1994

### National

**For Guatemala, Honduras, El Salvador, Costa Rica, Panama:**

1. Review of Road Repair and Maintenance
   Approximate cost: $300,000 each country (study only)
   Time frame: studies 1988
   implementation & procurement 1989-1994

   An energetic program of rural road rehabilitation and maintenance to keep roads passable in all weather and to reduce damage to trucks.



16

**For Guatemala, Honduras, El Salvador, Costa Rica:**

2. Container Freight Stations
   Approximate cost: $1.2 million each
   Time frame: location, design etc. 1988
   construction 1989-1992

   Construct a network of container freight stations in key locations to facilitate the consolidation of cargo for export and the unpacking of containers for distribution.

**For Guatemala, Honduras and El Salvador:**

3. Refrigerated Warehouses
   Approximate cost: $1.8 million each
   Time frame: study 1988/1989
   construction 1989-1993

   Construct public refrigerated warehouses to facilitate the consolidation of perishable cargo.

**For Guatemala and Panama:**

4. Review of Port Equipment Repair and Maintenance Facilities
   Approximate cost: $300,000 each country (study only)
   Time frame: study 1988
   implementation & procurement 1989-1994

   Investigate current levels of port equipment maintenance, recommend workshop improvements and mechanic training.

**For Guatemala:**



17

5. Port Equipment for Santo Tomas
   Approximate cost: $3 million
   Time frame: by 1990

   Procure and install equipment to improve container handling efficiency.

   **For Panama:**

6. Review of Airport Facilities
   Approximate cost: $50,000 (study only)
   Time frame: study 1988-1989
   construction 1989-1993

   To promote exports by air freight, study future requirements now to avoid future bottleneck.

   **For Belize:**

7. Review Ministry of Works' capability for maintaining its own road equipment and provide tools and training to make up shortfall.

8. Continue or expand the existing road programs in farm/feeder road construction.

9. Review the World Bank study of a deep draft port at Big Creek.

10. Provide additional refrigerated container outlets at Belize City port and eliminate the sharp corner in the access trestle.

## INSTITUTIONAL RECOMMENDATIONS

### Regional

1. Contract Law Amendments
   Approximate cost: not known
   Approximate benefit: $80 million increased sale minimum per year
   Time frame: study 1988-1990
   immediate programs 1990-1995
   long-term programs 1990-on

2. Overseas Representation
   Approximate cost: $600,000 per year
   Approximate benefit: $28 million increased sales
   Time frame: initial organization 1988
   open office 1988/1989

3. Group Problem-Solving Assistance
   Approximate cost: $500,000 per year
   Approximate benefit: up to $150 million increased sales
   Time frame: initial organization 1987/88
   start program 1988

4. Representation at Tariff Conferences
   Approximate cost: $500,000 per year
   Approximate benefit: $2 million minimum increased sales
   Time frame: set-up office 1987/88
   presentations 1989 on

5. Standardized Trucking Regulation
   Approximate cost: $200,000 to $600,000 per year
   Approximate benefit: $80 million increased sales
   (included in #2 above)
   Time frame: preliminaries 1987-1989
   short-term programs 1989
   long-term programs 1989 on

6. Increase Number of Customs Inspectors at US Ports or Preinspection
   Approximate cost: $600,000 per year
   Approximate benefit: $2.4 million increased sales
   Time frame: 1987/88

**National**

**For Guatemala, Honduras, El Salvador, Costa Rica, Panama:**

1. Contract Law Amendments
   Approximate cost: not known
   Time frame: study 1988-1990
   immediate programs 1990-1995
   long-term programs 1990-on

   - Introduce changes to the current system of contract law to enable contracts to be easily entered into and for their disputes to be quickly, cheaply, and consistently resolved.

   - Introduce contracts of carriage to enable a shipper and a carrier to enter into definite and easily enforceable agreements regarding date, quantity, and cost. By allowing carriers to plan for guaranteed volumes and schedules, such contracts would reduce the cost to carriers and hence reduce freight charges to producers.

- Form exporters' groups to negotiate contracts; determine the best legal structure so that groups can bind their members to the volumes and schedules they have set out in contracts with carriers.

- Introduce appropriate legislation to encourage the operation of transport brokers.

**For Guatemala, Honduras, El Salvador, Costa Rica, Panama:**

2. Education Programs

Approximate costs: $1 million total annual budget each country

Time frame: 1988 on

- Introduce education programs to help nationals involved in the export of non-traditional products to produce, transport, and market these products more effectively.

  - Training for truck drivers, including awareness of the special needs of easily damaged products

  - Training for mechanics, including ways to verify the effectiveness of truck maintenance programs

  - Training for managers of trucking companies, including ways to reduce empty trips

  - Classes in group problem-solving techniques. Graduates of such classes would be a seed group of nationals trained in group problem-solving who could improve the methods and focus of meetings among producers, carriers, and government officials.

**For Guatemala, Honduras, El Salvador, Costa Rica, Panama:**

3. Overseas Representation
   Approximate cost: $300,000 per year per office

   - o Place exporters' representatives in Miami to verify the condition of cargo on arrival and seek potential buyers (especially for perishable products).

**For Guatemala, El Salvador, Panama:**

4. Increase Number of Customs Inspectors at US Ports or Preinspection
   Approximate cost: $100,000 per year per country
   Time frame: 1987/88

**For El Salvador, Panama, & Belize:**

5. National Marketing Organization
   Approximate cost: $960,000 per year each
   Time frame: consultant selection 1988
   start program 1989

**For Honduras and Costa Rica:**

6. Revise the port tariff structure to be compatible with other ports in the region, using assistance from government revenues when necessary.

7. Reduce port charges to be commensurate with the services offered. This would require legislation enabling the governments to adopt some port expenses as being in the national interest.

**For Honduras and Panama:**

8. Correct any specific abuses in port charges. The National Port Authorities should appoint an experienced port employee to investigate claims of incorrect applications of published port tariffs; a transportation users' group may also employ its own claims inspector.

**For Guatemala:**

9. Simplified Export Procedures
   Approximate cost: $250,000 per year (estimated)
   Time frame: 1988 on

**For Honduras:**

10. Replace the vigilancia charge by an acceptable system of customs seal.

11. Revoke the 60-day limitation on bringing in container chassis and trailers.

12. Exempt the trucking industry from the current high import duties on spare parts for trucks operated outside the "cooperative" system.

**For El Salvador:**

13. Removal of Export Taxes for Non-Traditional Products
    Approximate cost: not known
    Time frame: 1988 on

**For Costa Rica and Panama:**

14. Revise the exchange earnings tax rebate (CAT) to remove existing uncertainities that have prevented its acting as the intended incentive to greater production.

**For Belize:**

15. Review the recent trucking regulations preventing foreign trucks from operating in Belize.

16. Approach the U.S. for exemption to its 40-kilometer limit on entry of foreign vehicles.

17. Create better financial incentives for Belizean exporters.

18. Actively assist Belize in attracting private capital by financing promotional campaigns and trade missions.



24