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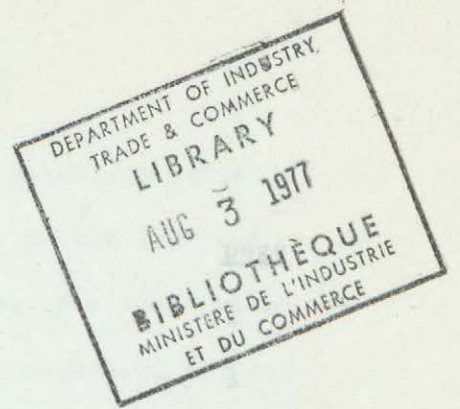
Report on

**PORT DEVELOPMENT INCLUDING CANADIAN CAPABILITIES
FINANCING AND EXPORT OPPORTUNITIES**



**Industry, Trade
and Commerce**

**Industrie
et Commerce**



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Transportation Industries Branch
Department of Industry, Trade and Commerce

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I N T R O D U C T I O N

The functions and physical facilities of ports and related cargo handling methods have undergone marked changes in the last two decades. Particularly in developing countries, there is a continuing demand for well qualified consulting engineering and marketing skills.

Canadian industry has enjoyed a fair degree of success in providing goods and services to third world countries for port and harbour development and construction, and in supplying specialized cargo handling equipment. Some companies have achieved notable international recognition, as a result they continue to obtain an increasing volume of export business.

This report was compiled during the period 1975-76 with the objectives of assessing current Canadian industrial capability, determining further opportunities for export business, examining some of the problems to be overcome and, within the departmental jurisdiction, proposing a means of improving Canadian benefit. In so doing, the report assembles data related to Canadian industrial capabilities in terms of port development, construction and manufacture of cargo handling equipment. It contains a brief compilation of economic data on third world countries noting current and future port development. The areas where Canadian industry skills might best be used to aid developing countries and increase export business are also noted.

In putting together the report it was deemed necessary to briefly review trends in ocean transportation and cargo handling technology. Furthermore, in common with many western world and developed countries, Canada continues to provide financial aid through CIDA and the International Banks; these aspects are also discussed.

The ready assistance of National Harbours Board specialists, of ITC Branches and of Canadian industry and its associations is gratefully acknowledged.

DEFINITIONS

Barge - a flat-bottomed boat used generally for transporting goods on in-land waterways

Basin - a large slip or dock partially surrounded by quays

Berth - the water area at the waterfront edge of a wharf reserved for a vessel

Break-bulk cargo - merchandise transported in smaller amounts than for bulk cargo

Breakwater - an engineering structure to afford shelter from wave action; may be called mole or jetty

Bulkhead - a retaining wall to prevent sliding of earth or fill into water

Bunkering - filling a ship's bunker with coal or fuel oil

Buoy - a floating object moored to the bottom, to mark a channel or point out the position of something beneath the surface of the water

Caisson - a watertight box or cylinder sunk to a prescribed depth to secure a good foundation; generally filled with masonry or concrete and acts as support for a structure

Chandler - a retail dealer in ship provisions, supplies and equipment

Cofferdam - a temporary structure for the exclusion of water from a site during construction

Conveyor - a transfer or handling mechanism that affords continuous movement through application of power or gravity

Copewall - a retaining wall along the face of a pier or wharf

Crib - box-shaped frames of timber or concrete sunk and filled with rock or gravel to form foundation for wharf and pier structures

Deadweight tonnage - normally abbreviated "dwt", is the carrying capacity of a ship in long tons when loaded to the Plimsoll line

Derrick - a mast or tall frame with suitable tackle for lifting heavy weights

Displacement tonnage - the actual weight of the vessel or the weight of the water displaced

Dock - the water area alongside a pier or wharf

Dolphin - an isolated cluster of piles used as a support for mooring devices or marker lights

Draft - the depth of water a ship draws, especially when loaded

Fender pile - a pile or mechanism close to a structure to prevent direct contact between vessel and the structure

Flume - an inclined channel for conveying water - as for power

Gallery - a long narrow platform, usually covered, attached by brackets to the side of a structure or supported independently by columns

Gantry - a structure that spans and may embody a travelling crane

Grain Gallery - enclosure for conveyor system delivering grain to or from elevators to point of delivery

Gross tonnage - the entire internal cubic capacity of a ship

Harbour - an area of water affording a natural or artificial haven for ships

Hydraulics - a branch of science dealing with practical applications of liquid in motion

Hydrology - a science dealing with the properties, distribution and circulation of water

Lighter - a barge or other small craft used in transferring cargo from ship to shore, or vice versa

Luffing Crane - a rotating crane with the capability of moving a load toward or away from the axis; load movement is achieved by changing the inclination of the boom

Moorings - means by which a vessel is secured to a fixed place, usually lines and cables

Pallets - portable platforms used for handling, storing or moving cargo, normally metal-reinforced, wooden structures

Pier or Jetty - a dock which projects into the water and may be referred to as a mole or breakwater pier

Pile - a large stake driven in the earth to support a building, pier or other superstructure, or to resist lateral pressure in a bulkhead, cofferdam; made of wood, metal or concrete

Port - a harbour plus terminal facilities; to distinguish from the term harbour, port involves some degree of development for purposes of commerce and physically, if there are no marked identifications of shore lines, ports may exist without harbours

Revetment - engineering structure to protect from erosion and to hold in place banks of canals, rivers and harbours

Stevedore - to load or unload the cargo of a ship in port, or work as a stevedore

Stockpile - a storage pile of accumulated reserve, for example, coal, mineral ores or fertilizer

Terminal - the buildings, structures and equipment at the end of a transportation movement, for the transfer, handling, delivery and reception of passengers and freight

Turn-around time - the total time taken to bring a vessel to berth, load or unload and reset on course

Turnkey operation - a project (such as a port development) in which the contractor completes the total work package of building, installation and equipment supply to the point of readiness for operation

Wharf - or Quay which latter is the term generally used in Europe; usually of solid construction and accommodates ships only on one side

SUMMARY

Objectives

The terms of reference for this report required that the nature and magnitude of export opportunities for Canadian industry in port development and related requirements be examined; problems to be overcome should be reviewed and a means of improving Canadian benefit proposed. In so doing it was noted that Canadian capabilities in port and cargo handling engineering development, construction and production should be analyzed and included.

Because the principal areas of export opportunities are in developing lands, it was decided that the report should focus on port and harbour development in third world countries.

Ocean Transportation and Port Technology

In common with road, rail and air, ocean transportation and ship design over the past two decades has undergone significant changes. As an example tanker fleets now include vessels of upwards of half a million tons capacity; bulk carriers, many of them with integral self-loading and unloading capabilities, have increased in size; containerships and combined container and roll-on vessels are now extensively used. The use of Lash (lighter aboard ship) vessels, particularly in coastal areas, is increasing and the full potential of ocean barge transportation has yet to be achieved. Increasing trade in western and developing countries places strong emphasis on quick vessel turn-around time in ports and at marine terminals. We see that in many developing countries serious bottlenecks exist; improved methods of cargo handling combined with efficient berthing stations are essential.

Planning for new ports or extensions to existing facilities is directly effected by vessel design trends; facilities are becoming more specialized. Particularly in developing countries authorities are faced

with critical decisions for port construction and improvement. Continuing emphasis will be placed on establishing ports as centres where materials and commodities can be processed and finished or part-finished for export. Furthermore inter-modal road, rail and air connections must be considered and port planning must now recognize environmental impacts. In the initial planning stage developing countries might best consider multi-purpose ports to harmonize with new and foreseen ocean transportation technologies.

Bulk and general cargo handling methods are undergoing increasing mechanization. The report indicates that this trend will inevitably replace traditional hoisting and hand-operated transfer systems. However, a wide disparity in methods still exists and particularly in heavily populated developing countries such as China and Nigeria where large labour forces can be used. Future container handling will involve automated ship-to-shore transfers at rates in excess of 35 boxes per hour. In western world and the U.S.S.R. remote control terminals may be in operation by mid-1980. The numbers of off-shore terminals are expected to increase, particularly those handling bulk cargoes such as oil, cereals, fertilizers and mineral ores. Technological advances in the next decade may see the introduction and further advances in automated bulk cargo loading systems, automatic docking systems, floating off-shore container terminals and similar innovative methods.

Port Organization and Financing

A detailed listing of port administrative, physical and equipment requirements ranging from customs offices to essential services is set out in the report. The listing is comprehensive and all aspects of port

management and operation are covered. This particular detail is taken from the National Harbours Board official port directory, November, 1975.

Financing for port development and construction and the provision of funds for equipment is available from the World Bank and other international institutions on a multi-lateral and bilateral basis. The main objective of the World Bank (IBRD) and its affiliates is to provide assistance for the economic growth of member countries. The Canadian subscription to the World Bank is \$941 million and Canada contributes to the affiliated International Development Association more than \$600 million. Contributions to other Banks such as the African Development Bank, the Asian Development Bank and the Caribbean Development Bank are on a smaller scale. Some of the more significant port and harbour projects for which Bank funds are being directed include Algeria \$70 million, Iran \$65 million, Nigeria \$58 million and Pakistan \$16 million. Similarly, Asian Development Bank (AsDB) funds proposed include \$94 million for Pakistan, \$54 million for Malaysia and \$30 million for developments in India.

Because Canada contributes substantial funds to growth in developing countries, it follows that the industry is given reasonable opportunities to propose against future developments and equipment needs. Some of the successes which Canadian consultants and construction and manufacturing companies have accomplished are detailed in the industry capability section of the report.

CIDA and EDC

The Canadian International Development Agency carries out the official government policy of financial assistance to third world countries.

The Agency's principal objective is to assist in economical, technological, educational and social developments. Canadian funds for multi-lateral assistance are also channelled through CIDA and in 1975 100 aid representatives were serving overseas.

A revised strategy was outlined in late 1975; to stimulate freer trade, developing countries will be able to bid for bilateral funds in competition with Canadian firms. Assistance will be concentrated on fewer sectors which should result in a much greater impact on major world problems and at the same time give the Canadian supplier information concerning projects and in what areas CIDA is likely to give support. CIDA funds directed to the transportation sector will continue to provide export opportunities for Canadian industry in port and harbour development and in cargo handling systems and equipment. This report gives some details of the CIDA operations and strategy and describes the methods for project identification, approval and implementation.

The Export Development Corporation is established to facilitate and develop export trade through the provision of insurance, guarantees, loans and other financial arrangements. Canadian industry is encouraged and assisted in its export endeavours by insurance protection for goods sold abroad and against loss of investment. EDC also provides loans to foreign buyers of Canadian goods and services. In terms of export projects associated with port and harbour development, construction and improvement, Canadian industry continues to benefit from the opportunities presented through CIDA channels and by the risk sharing and financing arrangements available under EDC provisions. In 1974 annual credits insurance risks underwritten for developing countries was in the order of \$385 million.

Canadian Industrial Capabilities

In port development and cargo handling technology, Canadian industrial capabilities extend through the complete spectrum from sophisticated laboratory technology, consulting engineering, erection and construction, systems and hardware manufacture.

Laboratory skills and technology in hydraulics is primarily confined to government, provincial and a few private facilities, several of which undertake subcontract work for Canadian consulting and contracting companies. One or two laboratories have carried out coastal engineering and marine-based projects and continue to be successful in specialized export projects in developing countries. These laboratories, with their high-class skills and equipment, provide an essential service to firms engaged in port development.

Some 80 Canadian companies have been listed as consulting engineering firms having a capability in port associated developments. A wide variety of skills is evident ranging from bulk terminal design, pipeline systems, soil mechanics, seismic surveys through to systems analysis and vessel and traffic management. Several Canadian consulting companies are well-known internationally having established a creditable reputation for efficiency and high-class engineering capability. Most of the consultant companies are based in the Provinces of Ontario, Quebec and British Columbia with other notable and active companies in the Maritimes and Alberta. Many have been successful in securing contracts for consultant work including oil and ore terminal design, bulk cargo handling systems and container terminals.

More than 130 Canadian companies, many of them subsidiary, were reviewed and categorized under the broad headings of construction, erection

and manufacturing. In the main these companies possess a demonstrated or latent capability in port, harbour and marine terminal construction and in manufacturing shipboard and shipside cargo handling equipment. A further grouping under miscellaneous requirements is provided.

Capabilities in shipboard equipment include complex structures such as bulk conveyors, liquid pumping and suction equipment, mooring and self-unloading systems. For shipside (or dockside) equipment Canadian firms manufacture high-capacity conveyors and stackers, hose towers, submarine pipelines, aerial ropeways and a wide variety of loading and unloading mechanisms. Miscellaneous port and ancillary requirements include buoys, tugs and patrol boats; breakwaters, channel markers, railcar dumpers and wharf construction are included. A wide variety of mobile equipment suitable for port use is produced by Canadian industry for both construction and cargo handling. This equipment includes paving machines, portable cranes, trucks, floating cranes, graders and forklift trucks. Upwards of 100 firms are reviewed, many of them successful and long-term exporters of Canadian-made equipment.

In general terms the detail of Canadian capabilities included in the report is representative. It is not exhaustive and it will be understood that unforeseen events such as company mergers and take overs, the formation of new companies or geographical transfer of facilities will mean that the statistics are representative only at the time of publication.

Export Potential in Developing Countries

In common with the review and tabulation of Canadian industrial skills, the summaries of developing countries are representative at this particular time. The résumés are set out in general terms and note current or proposed activity in port and harbour development. Several Canadian

companies are already working successfully overseas; efficiency in carrying out projects has led to follow-on contracts. Further export opportunities in port and harbour development will be most apparent in those countries which suffer from severe port congestion and where bulk and general cargo handling methods and facilities are archaic. Growth in international trade between western and third world countries, coupled with advances in vessel design, will certainly pressure port authorities into further development and improvement. Countries which at this time are deemed priority areas for port and cargo handling export business include China, Cuba, the Gulf States and Mexico; others are noted and described in the report.

Export Business Opportunities and Problems

The report provides details of the level and diversity of foreign business enjoyed by the Canadian industry. Port and harbour projects in developing countries are in the main eagerly sought by international bidders since they will likely involve allied aspects of inter-modal transportation projects such as rail, road and waterways. Urban development and power projects, natural resource exploitation and new industrial activity are frequently complementary to port development and improvement schemes. The overall industrial development and economic aspects offer the widest scope for consulting, engineering, construction and manufacturing skills.

Export opportunities are publicized by the International and Regional Banks, by Canadian government departments and agencies. Opportunities may stem also from direct or indirect international business contacts and associations.

The problems encountered in seeking and securing export business and the proper understanding of what are sometimes complex administrations

are reviewed. Principal problems include the need for speedy advice concerning export opportunities related to port development, political uncertainties and stability of newly-formed governments in developing countries, lack of inter-company co-operation and reluctance to impart business intelligence or to form consortia arrangements.

Summary of Conclusions

The conclusions note the common impact of developing marine technology on advanced and third world countries. Canadian skills in port development and manufacture of cargo handling equipment compare favourably with other western world nations. The need to combine and co-ordinate engineering, construction and manufacturing talent is noted. In so doing it will be possible to develop an effective team approach when bidding for export projects. Canadian funds provided to assist developing countries should ensure a reasonable percentage of Canadian content. Continuing in-house development and product improvement, together with exposure to foreign competition, will upgrade the industry and increase Canadian participation in export port and harbour projects.

Note Concerning Recommendations

In developing this study project it has been noted that Canadian industry becomes aware of export opportunities through several sources. In terms of the export information supplied by the Federal Government, discussions with a number of companies point occasionally to some uncertainty concerning departmental, agency and branch responsibilities and functions. This is not an unprecedented comment. It requires further investigation. Likewise the Provincial departments of trade and industry are quite active in this same export sector.

With the objective of increasing Canadian export business in port and harbour development, certain recommendations will be placed before Branch management. These recommendations are not set out here in specific detail. However it may be said that they will include suggestions for improvement in government and industry liaison and in the flow of information concerning export opportunities.

OCEAN TRANSPORTATION

In planning, designing, developing, extending or modifying ports, harbours and terminals, technological trends in vessel design, cargo handling and new forms of ocean transportation should be considered. This introductory section outlines some recent trends and provides general background.

Contents are as follows:

- Vessel design - size trends
- Ship functions - categorized
- Port and harbour planning
- Multi-purpose terminal - an example
- Cargo handling technology
- Container cargo - shipborne v airborne
- Cargo transfer equipment
- Technology forecasts - 1980's
- Transportation in land-locked countries

The text of this section is a condensation of information and data derived from several sources including papers presented, and personal notes taken, at Europort (Amsterdam) and International Cargo Handling Co-ordination Association (ICHCA) conferences.

OCEAN TRANSPORTATION

Vessel Design

Technological developments in ocean transportation during the last decade have affected the majority of shipping operations. Predicting ship sizes to the year 2000 is hazardous. Berthing facilities and harbour depths will have a significant influence on ship sizes.

The increase in the unit size of ships has produced major changes in structural configuration and hull design. Commodity and cargo forms, together with related handling requirements, affect vessel configurations resulting in development of new types of vessels as well as improved and advanced methods for cargo handling.

Concurrent with these technological developments, recognition of the dependence of ocean transportation upon terminal interfaces has resulted in modifications to operational procedures and to vessel and port design. The objective is to provide a more effective and efficient overall system of transportation.

With the increase in crude oil prices, the cost of transport and storage crude oil becomes very significant. Such considerations affect the optimum size of tankers for any specific route. Similarly dry bulk carrier size and operations are influenced when transfer and storage costs absorb a large portion of the overall origin-to-destination transportation cost. It is expected that dry bulk carriers will level off in growth rate within the next five or six years; at the time the average dry bulk carrier on long distance routes may be in the order of 70 - 80,000 dwt.

Competition among container ship lines and other unitized cargo carriers on remunerative trade routes such as the North Atlantic and Pacific has resulted in development of over-capacity. This will give rise to more competitive features in vessel design which are expected to produce a number of new concepts in unit cargo transportation.

Barge carriers and roll-on-off ships were primarily designed to provide flexibility and encourage unit cargo in some lesser developed ports. However recent trends have influenced the use of these vessels on more defined and specialized trade routes.

The expected growth in vessel size for tankers, dry bulk carriers and containerships is shown in figure A. Present indications are that the growth of the average ship is slowing down because tonnage demands for the high density bulk trade routes are now being met by the delivery of very large carriers.

Catamaran-type ships (with certain exceptions) are currently used for stable platform and research work. Larger vessels up to 10,000 dwt for trans-ocean operations are expected to be in use by the end of this decade. The high volume and deck area to displacement ratio coupled with low resistance and high speeds makes these vessels attractive for unitized cargo.

Among high performance ships the rigid sidewall SES (Surface Effect Ship) appears to offer the most significant near-term potential. Such vessels of 2,000 ton displacement with trans-ocean capability are expected to be operational by the end of this decade. SES of 10,000 ton displacement are planned for the 1980's.

Barging in recent years has undergone major innovative changes and is becoming an increasingly important aspect in coastal and medium-distance offshore ocean transportation. These vessels provide the lowest ton/mile cost for most commodities and a degree of flexibility which compares favourably with competing transportation systems. Road and rail transport require some four times the revenue per ton/mile of that necessary to profitably carry bulk commodities by barge; offshore ship transport would normally require about twice the revenue.

A barge system can be quickly implemented and is now emerging as a major competitor to domestic and coastal shipping because of economical advantages, flexibility in operation and better integration with inland barging.

Improvement in barge design and associated navigation aids has increased the scope of barging activity. A modern tow in open water may carry 40,000 tons of freight compared with about 10,000 tons a few years ago. Barge controls are highly refined with sonic-depth finders on the bow, anchor windlasses are often radio controlled.

The full potential of ocean barge transportation has not yet been achieved. Present day port facilities are often inadequate to handle large liquid and dry bulk carrying ships; barge transportation offers quick turn-around advantages because of the separation of transport and power unit.

In the 1980's it is forecast that trans-ocean barging will be developed. This will have a major effect on international trade because of the impact on port development requirements. It will permit opening up of multiple trade routes particularly in developing countries, which are presently uneconomical and inaccessible.

In developing countries a substantial amount of break-bulk cargo will still remain to be handled and transportation systems must offer the benefits of latest developments without penalizing certain types of cargo. Barge carrying ships, such as those used in the Lash system (lighter aboard ship) are particularly suitable to many developing countries such as India, Bangladesh, Sri Lanka, Pakistan and Indonesia - or other countries where most of the ports need modernising. This Lash system is economical and particularly applicable where funds are limited and labour plentiful.

Lash ships have the advantage in that barges can be loaded and discharged at most modern ports as well as at older ports and terminals where no specialized equipment is required for loading or discharging. Furthermore Lash requires neither deep-drafted ports nor expensive cargo handling equipment; neither is the system tied up with large investment in computers and a suitable road system as an infrastructure.

In terms of cost ton for deadweight-ton of cargo carried, a Lash vessel is not more expensive than a cellular container ship assuming that both vessels are built in (say) European shipyards.

Forecast Trends in Vessel Sizes

The chart on the next page (which is referred to previously in the text) indicates the growth of three principal classes of vessels.

The world shipping industry appears to be heading toward operation at 50% of its capacity. It is estimated that at present nearly 25% of tanker capacity is under-utilized.

Between 1976 and 1980, in the bulk and ore fleet, production is expected to surpass requirements with an over-supply of approximately 21%.

Forecast Trends in Vessel Sizes

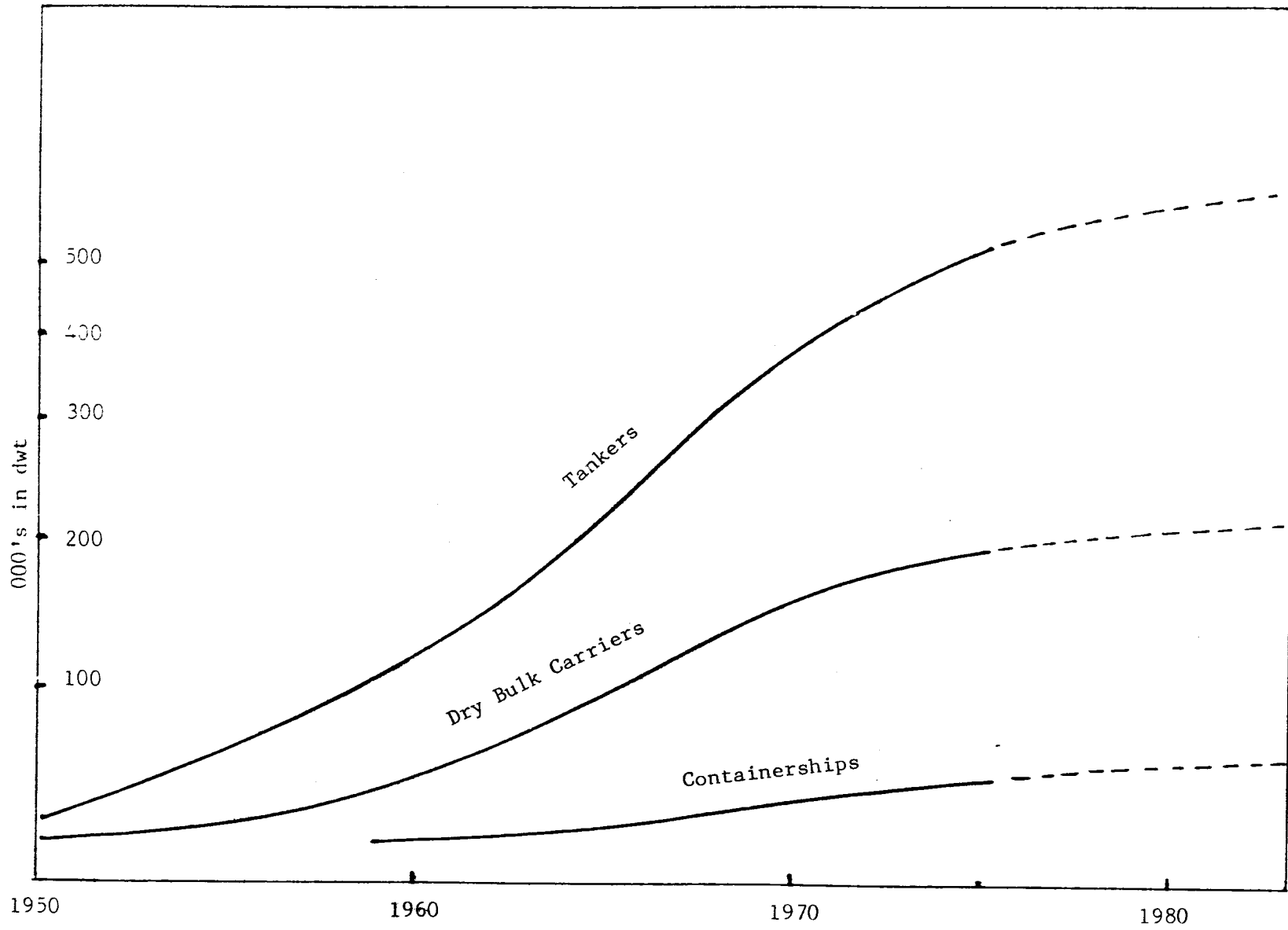


Figure A

Ship Functions

Dry General Cargo

Refrigerated Carrier
 Cargo Liner
 Dry Cargo Tramp
 Multipurpose General Cargo
 Roll-on/Roll-off
 Cellular Containership
 Trailer - Containership
 Trailership
 Fruit Carrier
 Universal Cargo Ship
 Automobile Ship
 Barge Carrier
 Pallet Ship

Specialized Dry Cargo

Lumber Carrier
 Car Ferry
 Paper Carrier

Dry Bulk Carrier

Gypsum Carrier
 Cement Carrier
 Coal Carrier
 OBO Carrier
 Grain Carrier
 Ore Carrier
 Sugar Carrier

Liquid Bulk Carrier

Crude Oil Tanker
 Slurry Tanker
 OBO Tanker
 Wine Tanker
 Milk Tanker
 Chemical Tanker
 LPG Tanker
 LNG Tanker

Port and Harbour Planning

Port, harbour or terminal planning and design, whether in advanced or developing countries demand the same standards of efficiency as for ship and cargo handling. Design trends in vessel sizes and configurations will directly affect port infrastructure and suprastructure.

In a developing country, port design must take into account the specific needs to raise that country's economy from the level of merely a raw-material-exporter to exporting semi-finished and finished manufactured goods. This present trend is seen in many developing countries such as those in the Gulf States, in Iran and Venezuela.

Port and terminal facilities are becoming more specialized in terms of the type of ships and cargoes handled. This gives rise to development of specialized liquid and dry bulk terminals, container terminals, palletized, barge-loading and vehicular terminals.

Present day port planning is now taking into account changes in traditional economic ties between former colonies and mother countries. Such changes are creating new export and import marketing conditions which will influence shipping patterns, ship types and the facilities for ship berthing and cargo handling. Developing countries will be increasingly confronted with important technological and economic decisions for port, harbour and terminal design and improvement.

Although no two modern ports operate identically, flexibility in port planning, port operating management and efficient control of interaction between administration and port users should form a common denominator. The methods used in achieving similarity can be applied to port and terminal planning in developing countries and to those countries which aim to improve their economies through modern international trade.

It is desirable that ports should be planned as prime generators of economic development. They can be established as a center where raw materials can be processed for final form for export or where such materials can be combined with imported materials for the manufacture of semi-finished or finished products for domestic or export markets. Thus the port becomes economically viable as a provider of employment other than that strictly associated with ship and cargo handling.

If a multiport system is planned, the total economic structure of the country should be analysed with particular attention given to the study of the transport sector which will determine road and rail connections between the port and cargo destinations.

Port planning and design should provide sufficient flexibility to permit adjustments in changing circumstances. In developing countries a short term objective can be set within the financial capacity of that country. Beyond that, longer term plans can be worked out. All planning should consider the environmental impact of new installations.

In general terms developing countries might best plan for ports and terminals based on multi-purpose operations which align themselves with new ocean transportation technologies. The main objective of the multi-purpose terminal is its ability to efficiently handle a wide variety of general cargoes. Additionally it will need to be able to adapt quickly to whatever the future traffic mix may be. The main characteristics, required handling equipment and approximate cost for a multi-purpose terminal are set out in subsequent pages.

Multi-purpose TerminalCharacteristics

(metres and sq. metres)

Quay length	360
Depth	28
Total area	100,000
Covered area	20,000
Open storage area	21,000
Pre-stacking and marshalling area	18,000
Delivery and receiving zones	14,000
Parking area	7,000
Other - loading points - railway etc.	19,000
Office space	1,000
Gates - entrance and exit	10
Rail track - single 4 lines	1,400
Weigh bridges	1
Rollon - off ramps	1

Multi-purpose TerminalCargo Handling Equipment

1 gantry crane	35 tons
1 heavy lift crane	30 tons
2 cranes - mobile quay cranes	15 tons
2 cranes - mobile quay cranes	6 tons
6 tractors	
18 chassis/trailers	
15 forklift trucks	3 tons
5 forklift trucks	10 tons
3 straddle carriers	
1 mobile crane	20 tons
2 mobile cranes	5 tons

Multi-purpose TerminalForecast Capital Cost

(1975 Estimate)

Berth and surfacing	\$ 6,100,000
Sheds	1,500,000
Ramps	250,000
Gantry cranes	1,700,000
Other cranes	2,000,000
Other mechanical equipment (straddle carriers, forklift trucks, tractors, chassis, trailers, etc.)	1,100,000
Other facilities (lights, weigh bridges, etc.)	400,000
Rail tracks	300,000
	<hr/>
TOTAL	13,350,000
	<hr/>

Cargo Handling Technology

In common with many other commercial and industrial sectors, the trends in cargo handling technology are directed toward greater mechanization. Modern ports are taking every opportunity to streamline and automate and so reduce labour costs and improve ship turn-around time.

In developing countries a transition from traditional to modern methods of cargo handling necessitates updating present facilities which handle the current cargo mix and planning for the introduction of full-scale unit load cargo services in future years.

Technological changes introduced by the United States, European, Japanese and other advanced nations are influencing trends and, of necessity, spreading to developing countries.

Wide disparity in cargo handling efficiency exists in many third world countries. Most ports in developing countries handle break bulk cargo and occasionally unit loads. Many ports are now mechanizing with the introduction of palletized operations, use of tractors and fork-lift trucks. Problems may arise if these ports have to handle a few containers, heavy machinery or similar equipment - with costly delays and attendant nuisance value.

Forecasts are that break bulk and palletized cargo will continue to form a significant portion of many commodities handled. Traditional hoisting and transfer methods will be replaced by mechanical conveyers, monorails and similar devices to provide a continuous flow in the operations and resulting in improved transfer rates. Many of these equipments will be shore based and transfer rates are expected to double in the mid 1980's.

The largest increase in handling rates has been experienced in liquid bulk carriers and some tankers are now able to transfer 20,000 tons per hour. The increasing use of large tankers and offshore deep-water terminals may require multi-stage pressure boosting on board ship and ashore.

Present day container transfer rates using gantry cranes are in the order of 500 tons per hour which is the equivalent to some 35 containers. Future developments in container handling will involve automated transfer and storage equipment including container transfer to and from trucks, rail, cars and barges. In the western world, designs of continuous-flow container terminals in which operations are automatically controlled, are now available. It is expected that remote-controlled container terminals will be in operation within the next decade.

Container business is increasing in developing countries and efficient handling methods will, no doubt, gradually emerge. As related to developing countries, container handling need not necessarily be geared to high-speed, high-cost dockside cranes and equipment. Small containerships with built-in lifting and handling gear are in wide use and prove to be economical and efficient. For example, Canadian designed and produced sidelift equipment will pick up the container dropped by ships' gear and transport the box to local or inland terminals quickly at a modest cost. A container service such as this can be set up in a very short time to handle cargoes in small quantities at small or congested ports. In these circumstances the principal item of equipment is the manouverable sidelift machine.

Factors which may react against the introduction of highly mechanised containerisation in developing countries include:

- Labour intensive port operations are preferable to capital intensive operations in countries where labour is plentiful and capital resources scarce;
- Capital intensive facilities are only economic when intensively utilised. There are insufficient guarantees that there will be enough container traffic to warrant a full utilisation of container facilities;
- The 'door-to-door' aspect of containerisation will be lost when serving some developing countries where hinterland links are unsuitable for the carriage of large modules; and
- Suitable return cargoes are frequently unavailable.

There is no doubt that pressure from the developed countries to introduce container services is increasing, and thus ports in developing countries are being faced with a challenge for which they may not be fully prepared.

Offshore, deep-water moorings are provided when it is not feasible or economical to construct a dock or provide a protected harbour. Many berths are built to handle bulk cargoes such as oil, iron and other ores, coal and minerals. These cargoes are transferred to or from the vessels by pipelines, moles or trestle conveyor equipment.

Container Cargo - Shipborne v Airborne

A certain level of competition will continue to exist between containerships and modern, wide-bodied aircraft. However, the speed and cost characteristics of these two transport modes are very different and attract different types of cargo. In the United States containership commodities in 1970 averaged about 12 cents per pound for exports and 20 cents for imports. For airfreight the relative figures were \$7.48 and \$5.87 per pound.

At present air-cargo jumbo jets appear to be the major challenge to containerships; in the long term it may be combined passenger/cargo aircraft which will provide stronger competition. The three factors which will make ship operators sensitive to airfreight competition are:

Change from break bulk general cargo to sophisticated container operations has altered the industry from labour-intensive to capital-intensive.

Major containership trade routes may experience over-tonnaging and consequent low operating profits. Cargo diverted from containership to airfreight will be high-value commodities and since rates are based on commodity value, loss of this business will make financial loss to containership operators.

Dock strikes and the relative efficiency of airline terminal operations will be important future factors. As competition posed by

airfreight increases, containership operators must become more selective in terms of rate increases. Raising the price on high-value, ocean-borne commodities may be negated if the business is lost to airlines.

CONTAINERS and CARGOES

<u>Container Type</u>	<u>Cargo</u>
Standard	General
Tank	Liquid Small Bulk
Open Bin	Dry Small Bulk
Pallet	Vehicles
Ventilated/Insulated	Perishable
Reefers	Refrigerated
Trailer Van	All Types
Strongback	Ammunition

CARGO TRANSFER EQUIPMENTShipborne - includes:

Conveyors

Cranes

Derricks

Elevators

Pumps

Ramps

Shorebased - includes:

Barges

Car Inverters

Car Loaders

Conveyors

Cranes -container-fixed boom-level luffing-mobile

Escalators

Forklifts

Pumps

Ramps

Stackers -bulk-pallet

Suction Loaders

Tractor-Trailers

Technology Forecasts - 1980's

Anti-Collision and Grounding Devices

Oily Water Separator

Continuous and Automated Unitized Cargo Loader/Unloader

Completely Automated Bulk Cargo Loading/Unloading Systems

Completion of Oceangoing Surface Effect Ship

Submerged Tanker Terminal with Bottom Loading/Unloading System

Development of Marine Gas Turbine with .42 sfc

Oceangoing, Detachable Tug-Barge or Barge-Ship Coupling System

Draft Reducing Device for Mammoth Tankers

Automatic Ship Mooring and Docking Systems

Catamaran Containerships

Floating Offshore Container Terminals

Automatic Port and Harbour Navigation and Maneuvering System

Completion of Submarine Tanker

Ships Built with Automatic "Cold" Steel Joining Techniques

Economic Nuclear Marine Propulsion

Overland Ship Transfer Systems

Transportation in Land-Locked Countries

Land-locked developing countries are some of the poorest in the world because of inaccessibility to the sea and remoteness from world markets. Some principal problems are reduction in high transport cost, planning harmonization with transit neighbours and reasonable assurances against contingencies caused by development of alternative routes. The complexities and inter-connecting issues need to be understood by all concerned since they affect overall costs.

A United Nations Expert Group has recommended consultation and studies to review existing and proposed transport facilities, together with co-operative arrangements for each land-locked developing country. The Group notes that an integrated approach is urgently needed and has recommended that UNCTAD (United Nations Conference on Trade and Development) develop procedures for co-operation. The Group also recommended that guidelines be prepared in the following areas:

- improvement of transiting procedures and regulations by joint action;
- international joint ventures in the field of transport;
- pricing in the transport sector.

External financial and technical assistance is essential for co-ordinating transport between land-locked countries and their transit neighbours. The U.N. Expert Group recommended that financial assistance should be given on the most favourable concessional terms.

An important characteristic of a land-locked developing country is that access to the sea involves infrastructure outlays in both the country itself and its transit neighbour. Thus a plan for the land-locked country alone is insufficient; the need is for close co-operation with its

neighbours in transport planning. In these circumstances external, financial and technical aid may become a viable catalyst to bring about proper co-ordinated arrangements. The chart which follows provides some basic statistical data.

Access-to-Sea Statistics

	<u>Origin</u>	<u>Port</u>	<u>Country</u>	<u>Distance</u>	<u>Means</u>
<u>AFRICA</u>					
Botswana	Gaberones	Durban	S. Africa	880	Rail
Burundi	Bujumbura	Dar-es-Salaam	Tanzania	1500	Rail & Water
C.Afr.Rep.	Bangui	Pointe-Noire	Congo	1820	Rail & Water
Chad	Fort Lamy	Lagos	Nigeria	2050	Road & Rail
Lesotho	Maseru	Durban	S. Africa	740	Road
Malawi	Blantyre	Beira	Mozambique	560	Rail
Mali	Bamako	Dakar	Senegal	1240	Rail
Niger	Niamey	Cotonou	Dahomey	1060	Road & Rail
Rwanda	Kigali	Dar-es-Salaam	Tanzania	1840	Road, Water & Rail
Swaziland	Mbabane	Lourenço	Mozambique	220	Rail
Uganda	Kampala	Mombasa	Kenya	1300	Rail
Upper Volta	Ouagadougou	Abidjan	Ivory Coast	1150	Rail
Zambia	Ndola-Lusaka	Lobito	Angola	2200	Rail
<u>AMERICA</u>					
Bolivia	La Paz	Arica	Chile	450	Rail
Paraguay	Asuncion	Buenos Aires	Argentine	1600	River
<u>ASIA</u>					
Afghanistan	Kabul	Karachi	Pakistan	2000	Road & Rail
Nepal	Katmandu	Calcutta	India	890	Road & Rail
Laos	Vientiane	Bangkok	Thailand	670	Road, Water & Rail

Distance given in Kilometres

PORT ORGANIZATION

This section outlines the overall requirements for port and harbour operations. It has been developed from National Harbours Board data.

PORT ORGANIZATION

List of organizations to operate buildings, structures, equipment and other types of facilities at a port or in a harbour.

I Port Administration

(a) Government (Federal)

- . Ministry of Transport or equivalent
- . National Harbours Board or equivalent

(b) Private

II Cities & Municipalities

(a) Parks

(b) Police & Fire Services

(c) All other services available

III Various Government Departments or Organizations

(a) Customs & Excise

(b) Defence or equivalent

(c) Fishery Services

(d) Agriculture

(e) Immigration

(f) Public Works

(g) Police

(h) Health & Welfare (incl. Quarantine Services)

(i) Ministry of Transport or equivalent

- . Pilotage
- . Coast Guard
- . Port Warden
- . Examiner & Shipping Master
- . Ship Channels etc.

IV Port Related Organizations & Services

(a) Cargo

- . Warehousing
- . Customs Brokers
- . Forwarders
- . Fumigating Services
- . Weigher, Sampler, Cooper Services
- . Stevedoring Services
- . Terminal Operations (Shed, Bulk & Container)

(b) Vessels

- . Salvage Co.
- . Ship Chandlers
- . Boatmen Services
- . Linesmen Services
- . Towing Co.
- . Dry-docks
- . Ship Repairs
- . Ship Laundry Services
- . Bunkering Services
- . Compass Adjusters
- . Pilot Services

(c) General

- . Port Warden
- . Ship & Cargo Surveyor & Insurance Co.
- . Railway Companies
- . Trucking Companies
- . Telephone Companies
- . Hydro Services
- . Labour Unions
- . Sanitary Services (Private or Municipal)
- . Security Guard Services
- . Restaurants & Mobile Canteens
- . Steamship Companies (Coastal & Oceangoing)
- . Steamship Agencies
- . Divers (incl. Scuba Divers)

V Port Oriented Organizations

Various Mining and other Industrial Organizations
(such as Grain, Pulp & Paper, Petroleum, Lumber
Aluminum, Iron Ore Companies, etc.)

VI Other Organizations

- (a) Ferry Services
- (b) Yacht Club
- (c) Others

VII Port and Harbour Buildings

- (a) Sheds
 - . Transit
 - . Storage
 - . Gear
 - . Container Storing
 - . Container Loading and Unloading
 - . Bulk Cargo
- (b) Warehouses
 - . Grain Elevators and Galleries
 - . Cold Storage
 - . General Cargo
 - . Bulk Cargo
- (c) Other Types
 - . Garages
 - . Guard Houses
 - . Power Plants
 - . Restaurants
 - . Longshoremen Amenities
 - . Repair and Maintenance Shops
 - . Pump Houses
 - . Yard Offices
 - . Offices
 - . Other Buildings

VIII Port and Harbour Structures

- (a) Berthing Facilities
 - . Wharves
 - . Quays
 - . Piers
 - . Jetties
 - . Docks
 - . Lay-By-Berths
 - . Oil Berths
 - . Floating Pontoons
 - . Mooring Buoys
 - . Dolphins

- (b) Ships Repair Facilities
 - . Dry Docks
 - . Floating Docks
 - . Marine Slipways
 - . Cradles
 - . Graving Docks
- (c) Basins
 - . Tidal
 - . Non-Tidal (incl. Doors or Gates, etc.)
where applicable
- (d) Ice Reflectors, Deflectors
- (e) Breakwater
- (f) Bridges, Tunnels, Overpass & Underpass
 - . Road
 - . Rail
 - . Pedestrian
- (g) Railway Systems
 - . Tracks
 - . Road Beds
 - . Switches
 - . Signals
 - . Crossings
- (h) Roadway Systems
 - . Roads & Streets
 - . Paved Parking Lots
- (i) Cargo Open Space Areas
 - . Handling Areas (Paved)
 - . Storage Areas (Paved)
 - . Others
- (j) Other Structures & Areas
 - . Tanks (Oil, Water, Chemicals, Edible Products etc.)
 - . Parks (incl. Swimming Pools and Change Rooms)
 - . Marinas (incl. Breakwaters, Pontoons, Offices etc.)
 - . Power Transmission Lines
 - . Telephone & Intercom Lines
 - . Water Systems (incl. Filtration Plant)
 - . Sewage & Drainage Systems (incl. Sewage Treatment Plant)
 - . Garbage Collection (incl. Incinerators)

IX Port and Harbour Equipment

(a) Vessels

- . Tugs
- . Fireboats
- . Inspection Boats
- . Police Crafts
- . Harbour Crafts
- . Other Small Boats
- . Pleasure & Sightseeing Tour Vessels
- . Pilot Boats
- . Ferries
- . Passenger & Cargo Vessels of all Types
- . Skows, Barges & Dredges
- . Hovercrafts

(b) Railway

- . Locomotives
- . Cars and Cranes
- . Snowploughs
- . Weighing Scales
- . Maintenance Equipment, etc.

(c) Motorized

- . Automobiles, Trucks & Tractors
- . Trailers, Semi-Trailers & Floats
- . Lifters and other cargo handling Mechanical Equipment
- . Straddle Carriers and other Container Handling Mechanical Equipment
- . Front End Loaders and other Bulk Handling Mechanical Equipment
- . Mechanical Diggers and other Excavating & Construction Equipment

(d) Others

- . Marine Legs & Grain Trimming Machines
- . Conveyors
- . Compressors & Drills
- . Magnets
- . Generators & Motors of all Types
- . Transformers
- . Truck Weighing Scales
- . Machinist & Welders' Equipment
- . Hand Tools
- . Various Equipment required by Trades

X Port and Harbour Services and Others

- (a) Pipelines & Cables
 - . Submarine
 - . Suspended
 - . Underground
 - . Overground
- (b) Telecommunication
 - . Radio
 - . Intercom
 - . Telephone
- (c) Navigational Aids
 - . Buoys & Lighthouses (incl. Anchors & other Securing Devices)
 - . Lights & Landmarks
 - . Reflectors, etc.
 - . Radar & other Electronic Devices
 - . Others
- (d) Ship Services
 - . Gangways
 - . Extra Mooring Lines
 - . Fenders
 - . Fresh Water Service Equipment
 - . Cargo Handling Gear & Apparatus
- (e) Road Services
 - . Loading Ramps
 - . Lighting
 - . Traffic Lights
 - . Traffic Signs
 - . Other

XI Port and Harbour Miscellaneous

- (a) Pollution Fighting Equipment
 - . Chemicals
 - . Oil Retaining Devices
 - . Skimming Devices
 - . Others
- (b) Fire Fighting Equipment
 - . Pumps
 - . Hydrants (other than City System)
 - . Other Equipment

FINANCING PORT DEVELOPMENT

This section tabulates the international sources from which funds for port development may be available.

FINANCING PORT DEVELOPMENT

in

Developing Countries

Developing countries, other than the richer oil producing nations, usually lack the foreign exchange needed to finance planning, construction, equipment and materials needed for port and harbour installations and improvements. Oil-rich countries such as Iran, the Gulf States and Venezuela may possess all the financial resources required but lack expertise; they can choose to obtain specialised assistance on port projects from international lending organisations which are able to provide high quality financial, technical and managerial expertise. With the assistance of these skills, the borrower is able to demonstrate the beneficial effects of the projects on the country's development.

Funds may be obtained from several financial sources. Member countries of international banks pledge new funds for capital replenishment as they are used up in loans and grants. The policy of the World Bank and similar organisations is to see its money usefully employed in development projects which are most beneficial to the economy of the borrowing country.

The table which follows is not exhaustive. It provides a listing of international financial sources from which development funds are available. Some of these sources of funds are partly financed with Canadian assistance and may be used for development projects which will include Canadian goods and services.

FINANCING PORT DEVELOPMENT *

MULTILATERAL

<u>Organisation</u>	<u>Headquarters</u>	<u>Purpose</u>	<u>Members</u>
AfDB (Africa)	Abidjan	African Development Bank's purpose is to promote investment of public and private capital in Africa, to use its normal capital resources to make or guarantee loans and investments, to provide technical assistance in the preparation, financing and implementation of development projects. It may grant direct or indirect credits.	39 African countries. In addition 15 non-African countries including Canada subscribe to the African Development Fund.
AsDB (Asia)	Manila	Asian Development Bank provides loans to foster economic growth including ordinary loans for foreign exchange and special loans for high priority projects and with lower interest rates.	27 Asian countries and 14 non-regional members including Canada.
BID (Latin America)	Washington	Inter-American Development Bank provides loans and technical assistance for social development and economic growth. Borrowers are member governments and private enterprises within member countries.	24 countries including Canada
BCIE (Central America)	Honduras	Five Central American members provide loans for economic development in the isthmus.	Costa Rica, El Salvador, Honduras, Nicaragua, Panama.

* This listing is not exhaustive.

<u>Organisation</u>	<u>Headquarters</u>	<u>Purpose</u>	<u>Members</u>
CDB (Caribbean)	Bridgetown	Caribbean Development Bank provides funds for its members to promote social and economic development and expansion of international trade.	20 countries including Canada.
IBRD (World Bank)	Washington	International Bank for Reconstruction and Development provides loans for projects when other financing not available. Aim is economic development of member countries. Borrowers are generally less developed countries and some private enterprises. Normally large loans of \$20.0 millions plus.	124 countries including Canada.
IDA (World Bank)	Washington	International Development Association provides loans for high priority projects in developing countries at low interest rates. Source of equipment is open.	113 countries including Canada.
IFC (World Bank)	Washington	International Finance Corporation provides long-term loans for private enterprises in developing member countries; risk capital for mining and industries. The emphasis is on less developed countries.	98 countries including Canada.
<u>BILATERAL</u>			
AID (United States)	Washington	Agency for International Development. Provides loans and grants to developing countries for their economic development. Major effort concentrated on key areas such as population, rural development, education, and health.	United States.

<u>Organisation</u>	<u>Headquarters</u>	<u>Purpose</u>	<u>Members</u>
CIDA (Canada)	Ottawa	Canadian International Development Agency. Overall objective is to assist in the economic, technical, educational, and social development of developing countries. Provides bilateral and multilateral assistance in form of grants and loans.	Canada
EDC (Canada)	Ottawa	Export Development Corporation assists Canadian companies to participate in export business. Insures Canadian firms against non-payment when Canadian goods and services are sold abroad; makes loans to foreign entities with which to procure Canadian goods and services.	Canada
EXIMBANK (United States)	Washington	Export-Import Bank provides loans and guarantees to buyers of U.S. goods; commercial and political risk guarantees for medium and long-term transactions.	United States
FAC (France)	Paris	Loans for development of French speaking countries in Africa and overseas territories. Procurement from France or local suppliers.	France
FED (EEC)	Brussels	European Development Fund. Provides funds for projects and programs for economic and social development in 46 African, Caribbean and Pacific countries and territories.	Nine EEC countries.

Organisation

Headquarters

Purpose

Members

KfW
(F.R.G.)

Frankfurt

Loans to all non-communist developing countries.
Goods bought with credits must be produced in
FRG or have high German content.

Federal Republic of Germany.

OMD
(Britain)

London

Loans and grants provided to developing countries
to raise living standards, promote social and
economic development, and expansion of international
trade.

Britain.

THE WORLD BANK and REGIONAL BANKS

This section reviews the following organizations to which Canada contributes financially:

World Bank

African Development Bank and
Development Fund

Asian Development Bank and
Development Fund

Caribbean Development Bank

Inter-American Development Bank

It provides a brief summary of ports and associated development and improvement projects approved by these banks in 1974.

THE WORLD BANK GROUP

The World Bank itself is officially named the International Bank for Reconstruction and Development (IBRD). It has two affiliates, the International Development Association (IDA) and the International Finance Corporation (IFC). All three are devoted to the same general objective which is to provide financial and other assistance for the economic development of member countries.

The World Bank is the largest multi-lateral source of development financing in the world.

The International Development Association was established in 1960 and performs the same function as the World Bank. It has the same staff and its loans are on much easier terms and made to the poorest member nations.

Established in 1956, the International Finance Corporation finances most types of commercial enterprises through investments in equity, loans without governmental guarantee and underwriting commitments. Its purpose is to provide venture capital to stimulate development of local markets and promote the international flow of private capital.

Canadian Contribution

Canada plays an important role in the World Bank Group and is the sixth largest contributor. Negotiations for a fourth replenishment of IDA were completed in 1973 and Canada, with 15 other developed countries, agreed to contribute \$276 millions which is 6.1% of the total replenishment of more than \$4.5 billions. Canada's total contribution to IDA since it was established in 1960 has amounted to some \$642 millions.

The Canadian subscription to IBRD was \$941.8 millions and of this amount almost \$95 millions have been paid in. The rest remains on call as a guarantee of the bank's obligations. Additionally Canada has an equity of \$3.5 millions in the International Finance Corporation.

A summary of major World Bank (IBRD) port and associated projects follows.

WORLD BANK PROJECTS 1974Port and Harbour Sectors

Brief details of port, harbour and associated development and improvement projects approved by the Bank and IDA in fiscal 1974 are as follows:

Algeria

Bank - \$70 million. A new port and associated facilities will be constructed under this project at Bethioua. From that location, liquefied natural gas and its by-products will be exported to Europe and the United States. When completed, the project will permit Algeria to meet its obligations under natural gas export contracts for the next 25 years. Total cost \$293 million.

Bangladesh

IDA - \$4.1 million. The rehabilitation of Bangladesh's inland water transport system will be assisted by this credit. The system carries more than half of the country's traffic between the interior and the seaports. Today, however, a large portion of the inland water fleet is laid up awaiting repair; and an important offshore oil terminal designed to transfer crude oil to Chittagong is out of service. Under this project, vessels and cargo handling equipment will be put back into operation, and the oil terminal will be restored. Total cost \$6.57 million.

Cameroons

Bank - \$24 million; IDA - \$24 million. This project is to reconstruct the last low-standard road section of the Trans-Cameroons route, a 1,100 mile road-rail artery linking the heavily populated and potentially productive northern provinces with the rest of the country and the sea, particularly with Yaoundé, the capital, and Douala, the main port. The route also serves the southwestern part of landlocked Chad. Total cost \$71 million.

Gambia

IDA - \$2.4 million. To supplement a port development credit of \$2.1 million extended in May 1970.

Iran

Bank - \$65 million. The port of Bandar Shahpur, at the head of the Persian Gulf, will be expanded under this project. Managerial assistance as well as "hardware" will be made available from the proceeds of the loan. Total cost \$160 million.

Mauritius

Bank - \$10 million. The harbour of Port Louis will be expanded and improved under this project. It will enable the port to cope with a 6% yearly growth in traffic. Handling costs at Port Louis will decrease, and the average service time for ships will shorten. Total cost \$16.1 million.

Nigeria

Bank - \$55 million. Under this project, the port at Lagos will be expanded and its management and operations improved. The loan will finance many different improvements: construction of berths, transit sheds, rail tracks, a warehouse and service building, and road access; channel dredging; purchase of cargo handling equipment; expert services for management improvement. Total cost \$83.8 million.

Pakistan

IDA - \$16 million. A new oil berth will be constructed at the port of Karachi. The berth will accommodate 75,000 dwt. oil tankers, and the project will enable the port to handle the expected oil traffic until about 1981. Total cost \$23.9 million.

Philippines

Bank - \$6.1 million. Cagayan de Oro and General Santos, two principal ports on the island of Mindanao, will be expanded. Both ports serve important agricultural areas producing corn, vegetables, fruit, beef and rice. The project will help to reduce inter-island transport costs by reducing cargo handling and shipping costs. Total cost \$12 million.

AFRICAN DEVELOPMENT BANK

The African Development Bank was established in 1964 to contribute to the development of the 39 member countries. The subscribed capital was set at \$445 millions and half of this amount was paid in. Canada made a loan of \$5 millions to the Bank and contributed \$700,000 in grant funds for technical assistance.

The Bank concentrates its operations on the poorest African countries and devotes about 40% of its activities to agricultural infrastructure projects directed toward solving the persistent and long-term problem of drought.

In 1972 Canada took a leading role establishing the African Development Fund (AFDF) which was set up to provide soft loans to the least developed member countries. After an initial contribution of \$17 millions, in 1975 Canada pledged a further \$7.5 millions for replenishment. Canada is now the largest contributor to this particular fund. Over the next few years approximately 50% of AFDF resources will go to drought-stricken countries of the Sahel.

In 1974 no Bank funds were provided or approved for port and harbour projects. A table showing the voting powers of countries contributing to ADB follows.

Voting Power

<u>Country</u>	<u>Voting Power</u>	<u>Percentage</u>
Algeria	3,075	6.41
Botswana	725	1.51
Burundi	745	1.55
Cameroons	1,025	2.14
Central African Republic	725	1.51
Chad	785	1.64
Congo	775	1.62
Dahomey	765	1.60
Egypt	3,625	7.56
Ethiopia	1,655	3.45
Gabon	925	1.93
Ghana	1,905	3.97
Guinea	875	1.83
Ivory Coast	1,225	2.56
Kenya	1,225	2.56
Liberia	885	1.85
Libya	3,625	7.56
Malawi	825	1.72
Mali	855	1.78
Mauritania	735	1.53
Morocco	2,135	4.45
Niger	785	1.64
Nigeria	3,035	6.33
Rwanda	745	1.56
Senegal	1,175	2.45
Sierra Leone	835	1.74
Somalia	845	1.76
Sudan	1,635	3.41
Swaziland	785	1.64
Tanzania	2,255	2.62
Togo	725	1.51
Tunisia	1,315	2.74
Uganda	1,085	2.26
Upper Volta	755	1.57
Zaire	1,925	4.02
Zambia	<u>1,925</u>	<u>4.02</u>
TOTAL	<u>47,940</u>	<u>100.00</u>

THE ASIAN DEVELOPMENT BANK

The Asian Development Bank was established in 1966 with a subscribed equity capital of \$1000 millions. Canada's share of this was \$25 millions of which half was paid-in and the balance remained on call.

The purpose of the Bank is to provide loans to foster economic growth; these include ordinary loans for foreign exchange and special loans for high priority projects and with lower interest rates.

In 1973, to meet the bank's expanding loan commitments, the subscribed capital was increased to reach a total of \$2.513 millions. Canada's part in this replenishment was a \$37.5 millions subscription of which \$7.5 millions was to be paid-in by three equal annual installments in 1973, 1974 and 1975. Canada also made a contribution of \$27 millions to the bank's Multi-Purpose Special Fund and \$200,000 to its Technical Assistance Special Fund.

In June 1974 the Bank established the Asian Development Fund to finance concessional lending up to December 31, 1975. The Fund's target was \$525 millions but it became operational when ten developed member countries pledged more than \$225 millions in contributions. Canada's contribution amounted to \$10 millions payable to June 30, 1975. Contributions to the Fund were untied for procurement in developing member countries and in contributor countries.

The Bank has extensive current and proposed port development expenditures amounting to some \$250 millions in the following countries:

Bangladesh	\$21.8 millions	Pakistan	\$94.0 millions
Indonesia	30.8 "	Philippines	6.6 "
Korea	16.3 "	Singapore	27.1 "
Malaysia	54.0 "		

A loan to Malaysia amounting to \$15.1 millions was approved in 1974 with details as follows:

Malaysia

Penang Port - Construction of a bulk cargo terminal involving a 440 foot jetty head with detached mooring dolphins and linked to a bulk storage yard on the shore by a 5,200 foot long approach jetty; reclamation of 37 acres of land at Prai Industrial area. Extension of existing Butterworth Wharves by 530 feet in length. Total cost \$23.9 millions including \$15.1 millions in foreign exchange. Estimated Completion Date: Mid-1977.

CARIBBEAN DEVELOPMENT BANK

The Caribbean Development Bank was first established in 1969. Its purpose is to promote international trade, improve social conditions and foster economic development.

Canada has been a member since the Bank was established providing an original subscription of \$10 millions out of the total authorized capital of \$50 millions. Recently the total capital has been increased to \$192 millions and Canada's subscription is now in order of \$27 millions, approximately fourteen per cent of the total. Final installment was made early in 1975.

Canada has also been a major supporter of the Bank's Special Funds to which total contribution of \$10 millions was paid off in 1975. Additionally Canada agreed to replenish the Agricultural Development Fund by \$6.1 millions over 3 years and commencing in 1975.

As a result of an Aid Donor's Conference in February 1975, Canada extended to the Bank a \$60,000 grant for technical assistance to finance national experts in the fields of engineering and agronomy for a period of two to three years.

A summary of 1974 Caribbean Development Bank maritime projects follows.

CARIBBEAN DEVELOPMENT BANK PROJECTS 1974Port and Harbour Sectors

Brief details of port, harbour and associated development and improvement projects approved in fiscal 1974 are as follows:

Cayman Islands

The Bank is providing funds for port and harbour development and improvement at Georgetown in Grand Cayman. Additionally several projects are being financed for multiple port and berthing improvements in the Lesser Antilles.

Leeward Islands

Deep water port projects were approved for Belize, Montserrat and St. Kitts totalling \$8.3 millions. Additional loans of \$2.16 millions and \$2.835 millions were made to assist in financing the increased cost of the port projects in Dominica and St. Lucia respectively. A loan of \$175,000 was made to Antigua for the purchase of dredging equipment for winning sand for the construction industry.

During the year, the Bank financed its first shipping project when it approved a loan of \$2.246 millions to the West Indies Shipping Corporation (WISCO) for the purchase of a new vessel for container traffic on a trunk route between Guyana, Trinidad, Barbados and Jamaica.

INTER-AMERICAN DEVELOPMENT BANK

The Inter-American Development Bank (IDB) is the oldest of the regional banks and was established in 1959. Its specific functions are to promote investment of public and private capital for development, use its own capital and other available resources to finance development of member countries, encourage private investment in development and help member countries to use their own resources to maximum advantage in the interest of national planning, regional economic integration and the orderly growth of foreign trade.

Canada became a member of IDB in 1972 with equity participation of \$242 millions. At the same time Canada pledged a contribution of \$60 millions over three years to the Bank's Fund for Special Operations from which loans are made on concessional terms.

Membership in the Bank promoted effective use of Canadian funds for development and assisted Canada to establish a sound working relationship with all of the Bank's Latin American member countries at a scale not possible before. It is also helping Canadian suppliers to become more familiar with Latin American markets and is increasing the interest of Latin American buyers in Canadian goods and services.

The Bank has made substantial progress over recent years in directing lending policies in favor of less developed member countries and by gradually reducing its support for industrial, mining and other large scale infra-structure sectors.

In 1974 the Canadian Project Preparation Fund was established with an initial CIDA contribution of \$1.5 million. The purpose of this fund is to indentify and formulate development projects including basic studies and engineering design. The fund is tied to procurement in Canada, in the project country or, in certain conditions, in other BID member countries.

Bank projects in the port and harbour sector and which were approved in 1974 are detailed on the following page.

INTER-AMERICAN BANK PROJECTS 1974Port and Harbour Sector

Brief details of port, harbour and associated development and improvement projects approved by the Bank in fiscal 1974 are as follows:

Barbados

Bank \$9.1 millions. Expansion and improvement of Port of Bridgetown - to expand and improve the facilities of the port of Bridgetown and to consolidate all cruise liner and cargo import, export and handling activities efficiently in one central port area in Bridgetown, including dredging, land reclamation, construction of a 600-foot extension of the existing quay wall, of one breasting-mooring dolphin, of a 513-foot shallow building, and related infrastructure work. Total cost \$12 millions, of which \$7.178 millions represent direct construction costs. Estimated Completion Date: 1978.

Dominican Republic

Bank \$35.5 millions. Expansion and improvement of Port of Haina. Construction of 5 berth, dredging of the port, and administration buildings. Total cost \$47.8 millions.

Mexico

Bank \$43.5 millions. Fisheries - Program for an integrated Fisheries Development. Will carry out the following activities: Improvement of fishery fleet, marketing, improvement of port facilities and fisheries capacity. Fleet equipment (\$22.3 millions); 10 tuna seiners (\$33.5 millions); Refrigeration equipment for cold stores (\$0.1 million) Refrigeration equipment for transportation (\$0.5 million); Equipment for the Training Center (\$0.14 million). Total Cost is \$84.65 millions of which \$58.2 millions are direct cost. Estimated Completion Date: 1979.

WORLD AND ASIA DEVELOPMENT BANKSOperation Cycle

The time scale by which Banks identify, investigate, evaluate and approve projects for financing is important. The following operational cycle is normal:

1. Project initiated by:
 - (a) Borrower mentions project to Bank staff;
 - (b) Area Loan Officer may identify project;
 - (c) Sector Project Officer discovers project informally;
 - (d) Resident Bank personnel identify project;
 - (e) UNDP country-program outlines pre-investment requirement.
2. Project economic and technical feasibility study financed by either borrower, UNDP, FAO, UNESCO, World Bank or a bilateral aid program.
3. Formal Bank involvement (not commitment) decided by field studies conducted by either:
 - (a) Project reconnaissance mission;
 - (b) Project identification mission;
 - (c) Project preparation mission.
4. Refinement and updating of project information conducted by project pre-appraisal mission.
5. Bank formally expresses willingness concerning commitment by fielding project appraisal mission which produces Appraisal Report for internal Bank use.
6. Loan negotiations commence between borrower and Bank.
7. Final Appraisal Report indicates loan negotiations completed; first procurement list issued.
8. President's Report and Recommendations distills Appraisal Report, Economic Report and other internal Bank documents on which Directors will base decision.
9. Board of Directors approves project.
10. Banks issue Press Release describing project.
11. Loan agreement signed with borrowers, President's and Appraisal Reports available for consultation in Ottawa or in the field.
12. Stage of "effectiveness" of loan reached when borrower fulfils all conditions agreed to during negotiations and disbursements may commence.
13. Borrower invites tender.
14. Bank fields project supervision mission as appropriate to monitor project progress and spending.

It is important that potential suppliers of goods and services are able to identify at what stage promotional efforts should commence. Purchasing in the initial stages may follow quickly after the Loan Agreement is executed. Promotional work for unpublished requirements will occur at an earlier stage. Direct contact should be made with the borrowing country's procurement people. The Trade Commissioner Service can also be of assistance.

THE CANADIAN CHARTERED BANKS

The international operations of the Canadian chartered banks have been expanding rapidly during the past decade and Canada has become one of the world's largest international banking nations. In 1960 the banks had foreign currency assets of less than \$3 billion. Today foreign currency assets represent about 28 per cent of total assets.

The Canadian banks maintain more upwards of 7000 branches in Canada and close to 500 branches, agencies, subsidiaries and affiliates abroad, in more than 40 countries. Through their branches, representative offices, affiliates or correspondents, the banks are able to service virtually in every country of the world the international banking needs of their customers.

The chartered banks always have played an important role in the financing Canadian trade. With the growth of the capital goods and services export sector, the type of export sector for which longer credit terms usually are warranted, the banks have been expanding their medium-term and even long-term financing business, largely in US dollars - the currency in which most of the world's trade is conducted.

A wide variety of complex and specialized services are provided by specially trained staffs at international and foreign exchange departments located at head office and regional levels.

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The following are among the services available to exporters:

- provision of buyer or supplier financing in Canadian dollars or in foreign currencies;
- preparation of reports and advice on the credit status of buyers and potential buyers in foreign countries;
- purchase or sale of principal foreign currencies for immediate or future delivery;
- handling of commercial letters of credit and the negotiation of drafts drawn under letters of credit on foreign or Canadian banks;
- provision of reports or counsel on market conditions, sales and investment prospects, import and exchange regulations and plant locations;
- collection and discounting of time and sight drafts drawn on foreign importers;
- handling of foreign remittances and transfers;
- a liaison for federal and provincial government organizations, as well as for foreign financial corporations, in their various assistance programs for exporters.

A listing of banks follows:

INTERNATIONAL DIVISIONS

Canadian Imperial Bank of Commerce
International Division
Commerce Court
Toronto, Ontario M5L 1G9

Bank of Montreal
International Banking
129 St James Street West
Montreal, Quebec
H2Y 1L6

Bank of Nova Scotia
International Department
44 King Street West
Toronto, Ontario M5H 1E2

Bank Canadian National
Export-Import International Division
500 Place D'Armes
Montreal, Quebec H2Y 2W3

Royal Bank of Canada
International
Place Ville Marie
Montreal, Quebec
H3C 3A9

Bank of British Columbia
International
1725 Two Bentall Centre
Vancouver, British Columbia V7X 1K1

Toronto Dominion Bank
International Division
P.O. Box 1
Toronto Dominion Centre
Toronto, Ontario
M5K 1A2

The Provincial Bank of Canada
International
221 Saint Jacques Street
Montreal, Quebec
H2Y 1M7

CIDA

This section reviews in general terms CIDA methods and administration of financial assistance toward developing countries.

The data is taken from 1975 CIDA publications.

CANADIAN INTERNATIONAL DEVELOPMENT AGENCYObjectives

The Canadian International Development Agency (CIDA) carries out Canada's official program of development assistance to Third World and developing countries. The agency reports to Parliament through the Secretary of State for External Affairs.

CIDA's overall objective in terms of international development is to assist in economic, technical, educational and social development. In its endeavours toward this objective, CIDA provides assistance to:

- expand industrial and agricultural production
- improve social conditions
- raise levels of academic and technical training so that productive skills can be increased
- alleviate hunger and other hardship
- encourage the private sector to take part in international development assistance
- co-ordinate Canada's bilateral (country-to-country) programs with those of the United Nations and other international organizations working toward international development.

Through CIDA's bilateral programs, Canada co-operates with more than 70 developing countries in five main regions - Asia, Commonwealth Africa, Francophone Africa, the Caribbean, and Latin America. Canadian funds for multilateral aid are also channeled through CIDA to help finance the work of international institutions and research agencies seeking solutions to the many problems of international development.

During 1974 the number of aid representatives overseas increased to 101 and nine more were added during 1975. CIDA provides half of these representatives and most of the remainder are provided by External Affairs, plus a few by Industry, Trade and Commerce.

CIDA Budget 1975 - 1976

International development expenditures are expected to reach \$903 millions in fiscal year 1975-76, an increase of 27 per cent. At current inflation rates, this will equal about 0.57 per cent of GNP. Information on Government spending plans for the new year indicates that almost \$250 millions of the allocation will be spent in a combination of bilateral and multilateral food aid. Bilateral programs will total \$570 millions and multilateral \$302 millions. Another \$31.7 millions will go to support efforts by Canadian and international non-governmental organizations, and the International Development Research Centre will receive \$27 millions.

CIDA will spend an additional \$22.6 millions, on administration, an amount equal to 2.4 per cent of total aid expenditure.

Bilateral Programs

The criteria for bilateral (that is country-to-country) aid and general guidelines for Canada's financial assistance can be summarized as follows:

- specific economic needs of the country and availability in Canada of resources to meet those needs
- ability of developing countries to utilize Canadian resources effectively
- level and types of aid available from other donors
- extent to which Canada can influence recipient country's economic performance through its aid program
- political importance attached to economic development and historical ties with Canada.

Other criteria such as the size of the population, the need to avoid excessive dispersion of the program, the presence or absence of a Canadian mission in the country and trade possibilities are also taken into consideration.

In 1974 fifty per cent of disbursements went to only five countries and sixty-two per cent to ten countries. In all there were disbursements to eighty-two countries if the associated states of the West Indies are counted individually.

Canada's assistance is being extended predominantly to the poorest countries of the World and this trend is continuing. The greatest proportion of bilateral assistance has historically been directed toward developing countries of very low income. In 1974 the principal recipients of bilateral aid were:

	\$ millions	
India	69	Tunisia 13
Bangladesh	58	Nigeria 12
Pakistan	39	Ghana 10
Indonesia	22	Niger 8
Tanzania	18	Kenya 6

Multilateral Programs

Multilateral refers to international institutions supported by more than two countries and includes the World Bank, the Asian Development Bank, the Inter-American Development Bank, the African Development Bank, and the Caribbean Development Bank. Projects financed by multilateral institutions mean cash sales for hard currency.

As previously noted Canada is the sixth largest contributor and continues to play an important role in the World Bank and other institutions concerned with assisting developing countries. Canada's contribution to the World Bank still forms the largest single item in multilateral allocations. However the level of aid may decrease somewhat due to a shift in emphasis as a result of Canada's increasing involvement in the regional development banks.

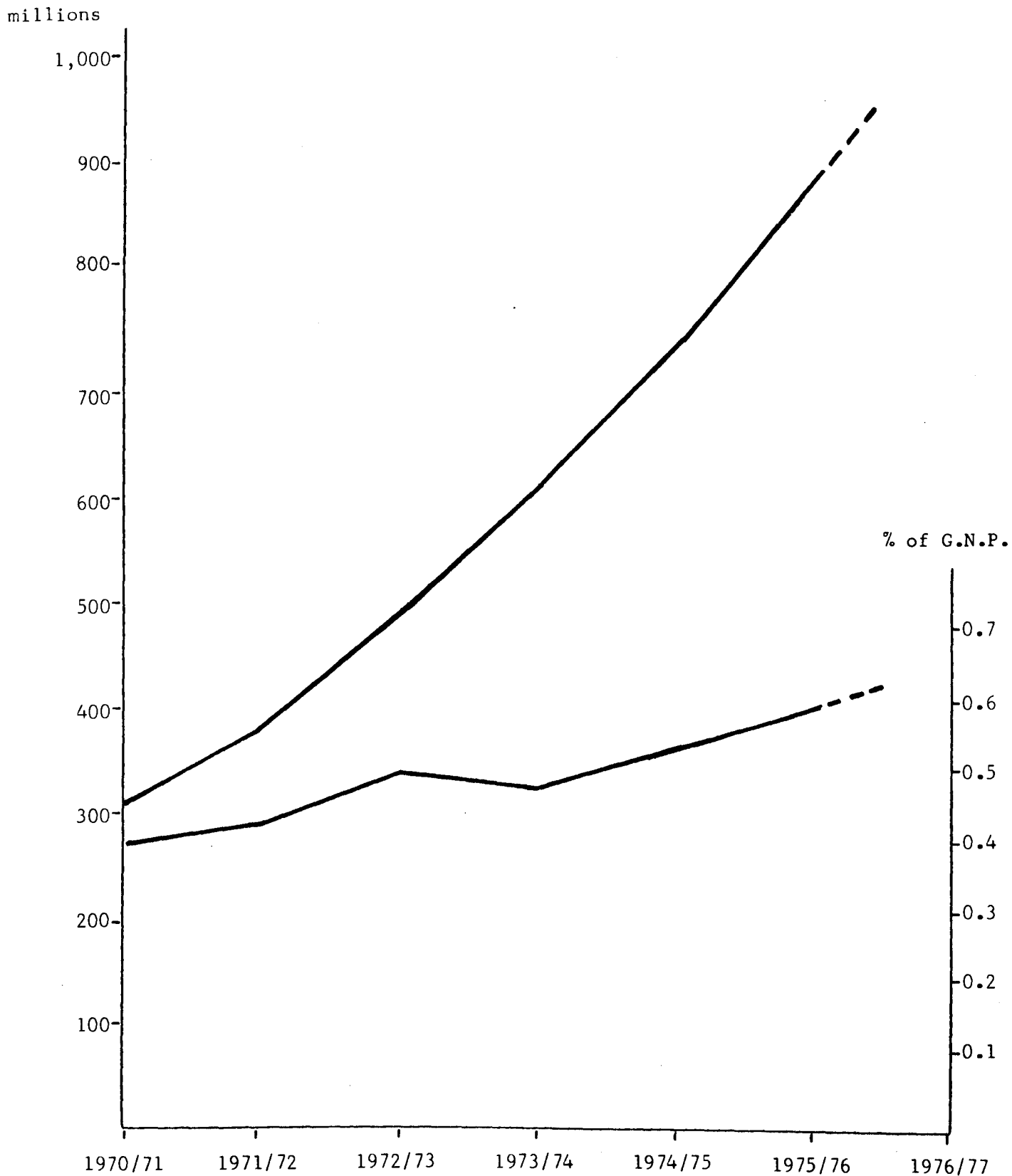
Out of \$188 millions in 1974, principal multilateral disbursements were as follows:

International Development Association	\$69 millions
Inter-American Development Bank	42 "
U.N. Development Programs	22 "
Food Aid	16 "
Asian Development Bank	10 "
African Development Bank	6 "

(disbursements rounded-off to nearest one million).

A summary of Canadian Official Development Assistance for fiscal years 1974-75 and 1975-76 follows.

GROWTH OF CANADIAN OFFICIAL DEVELOPMENT ASSISTANCE



Source: CIDA, Historical Statistics, Policy Branch

Summary of Development Assistance

	<u>\$ millions</u>	
	1974-75 (Actual)	1975-76 (Approved)
BILATERAL		
Grants	133.5	160.5
Loans	232.4	253.5
sub-total	<u>365.9</u>	<u>414.0</u>
MULTILATERAL		
Grants	42.0	60.1
Loans	39.0	71.8
Advances	92.9	72.0
sub-total	<u>173.9</u>	<u>203.9</u>
FOOD AID		
Bilateral	131.4	156.5
Multilateral	15.8	98.5
sub-total	<u>147.2</u>	<u>255.0</u>
SPECIAL DEV. ASSISTANCE		
Non-Govt. Organisations	26.0	31.8
Intl. Dev. Research Cr.	19.0	27.0
Other	.8	1.5
sub-total	<u>45.8</u>	<u>60.3</u>
TOTAL	<u>732.8</u>	<u>933.2</u>

CIDA Liaison with Canadian Industry

In 1969 CIDA established a Business and Industry Division with the objective of encouraging Canadian business to participate in industrial development through joint ventures. As a means of developing industry participation the current Pre-investment Incentive Program was launched. This provides funds to a maximum of \$2,500 for Starter Studies and a maximum of \$25,000 for Feasibility Studies.

Starter Studies help to defray visit costs to conduct a preliminary investigation into the possibility of establishing an enterprise or forming a joint venture with a developing country. Allowable expenditures cover airfare, accommodation and living expenses for approved personnel. All applications are approved prior to departure and the study period should preferably not exceed fifteen days.

Feasibility Studies are normally undertaken once the Starter Study has determined favourable conditions; when it is apparent that a more detailed study is desirable. Feasibility Study must meet professional standards and should include the following:

- analysis of the general conditions for doing business in the host country
- the government's attitude towards private foreign investment and incentives or constraints in force
- a study of market potential
- cost analysis including labor material, capital equipment, transportation, taxes and financial costs
- projected statements of profitability and cash flow

- technical studies relating to engineering and construction feasibility
- location studies including alternative sights and corresponding design and costs details

The proposed project should contribute to the social and economic development of the host country. It should also have host government support and approval.

Canadian firms can be financed to undertake professional or technical services from either Grant or Development Loan funds. Normally those companies having not less than 51% Canadian ownership are considered for assignments.

Grant and loan funds may be used only to meet the cost of Canadian services rendered. Only firms registered with CIDA are considered for professional assignments. During the company selection process the following criteria are applied:

- Canadian ownership and personnel
- experience in similar assignments
- qualifications of professional or technical staff
- recommendations of recipient countries
- demonstrated initiative in seeking foreign project work

In the case of Grant Assignments costing \$200,000 or less, a list of qualified firms is prepared by CIDA from which one company is selected. The contract is subsequently negotiated, signed and administrated by CIDA.

When Grant Assignments cost more than \$200,000, normally three or four firms are selected and proposals invited. CIDA then assesses the proposals and selects the firm to carry out the assignment. CIDA is subsequently responsible for contract negotiations, signature and administration.

When Loans of less than \$200,000 are involved, the Borrower (that is the developing country concerned) invites proposals from three or more qualified firms, or may recommend one company. The procedure to be followed and the firms selected are subject to the prior approval of CIDA. Subsequently the contract is negotiated, signed and administered by the Borrower or designated agent; terms and conditions of the contract are approved by CIDA.

When Loan Assignments are estimated to cost more than \$200,000, the Borrower recommends to CIDA one or two Canadian firms from which he wishes to invite proposals. CIDA reserves the right to add one or more firms to the list. The firm recommended for selection is submitted to the Agency for approval. The contract is then executed between the firm and the Borrower and is subject to prior approval of terms and conditions by CIDA.

The foregoing procedure would vary slightly with respect to work performed in Latin American countries under the Canadian Government's Agency Agreement with the Inter-American Development Bank.

CIDA Lines of Credit

Lines of Credit are provided primarily for balance of payments support so that developing countries may purchase a range of equipment and services from Canadian suppliers. In general terms they are intended to:

- serve as an advance on the traditional aid operations
- serve both the private and public sectors
- establish normal commercial type operations between the developing country and Canada, thus encouraging buyer-seller relationship
- assist incipient industry
- provide spare parts or overhauls for existing plant
- overcome problems of foreign exchange
- provide services and goods
- require a minimum of supervision

Canadian companies are encouraged to take an active part in promoting business in the recipient country and advised to maintain a continuing liaison with the appropriate commercial officer.

A listing of Line of Credit loans for 1974-75 onwards are detailed on the following pages.

CIDA Strategy 1975-80

The recently-issued strategy involving new policies and directions for 1975-80 was outlined in September, 1975. There are two main themes: the Canadian perspective in world development is being widened and each development program or project will be tailored to the specific needs of recipient countries.

This strategy is not a break with the traditional Canadian aid policies but a continuation and development of them.

Prior to the policy change announced in September, 1975, up to 20 per cent of the bilateral program could be untied to purchase services and goods in developing countries. These countries will now be able to bid for the remaining 80 per cent of bilateral funds and they will be competing with Canadian firms in areas where Canada has specialized capabilities. In the long term this action could stimulate freer trade particularly between developing countries. By allowing procurement at less cost in other developing countries, Canada will be helping the country concerned to save foreign exchange and at the same time contribute to the economic growth in the source country.

By concentrating its assistance in fewer sectors, such as food production, energy and shelter, CIDA hopes to have a greater impact on attacking major world problems. Also, this should give the Canadian supplier and consultant a better idea of the types of projects CIDA is likely to support.

CIDA will be working more closely with Export Development Corporation in financing joint development schemes for countries having a more accelerated rate of industrial development.

Tabulated and incomplete detail of the more significant CIDA expenditures on port development follows.

CIDA LINE OF CREDIT LOANS1974-1975 Onwards

<u>Country</u>	<u>Amount</u>	<u>Remarks</u>
	\$ million	
Pakistan	10.0	portion of credit is for power section
Indonesia	25.0	civil aviation sector
India	12.0	oil and natural gas exploration equipment
India	20.0	loan completed
Algeria	15.0	agricultural machinery
Morocco	5.0	agricultural machinery
Tunisia	15.0	general credit
Ivory Coast	6.0	general credit
Tanzania	2.0	general credit
Jamaica	3.8	Canadian material and venture capital
Barbados	2.6	water development

Scheduled Lines of Credit

<u>Country</u>	<u>Amount</u>	<u>Remarks</u>
	\$ million	
Pakistan	15.0	general credit
Nigeria	12.0	general credit - loan not yet signed
Cuba	10.0	equipment
Morocco	10.0	general credit over 5 years
Guyana	6.0	logging equipment
Brazil	6.0	feasibility studies
Niger	6.0	agricultural machinery
Barbados	5.0	water development over 4 years
Colombia	5.0	general credit for institutional support
Ghana	5.0	general credit
"	3.0	credit to National Investment Bank
"	.6	feasibility studies
Peru	5.0	general credit
Algeria	4.0	feasibility studies
Colombia	3.0	feasibility studies over 5 years
Jamaica	2.0	national water authority
Cameroon	1.5	general credit

C.I.D.A.
PORT AND ASSOCIATED DEVELOPMENTS
(Cdn. \$000's)

<u>Country</u>	<u>Project Description</u>	<u>Budget</u>
Barbados	Major port studies	\$ 190.0
Bangladesh	Improvement to port facilities	238.0
Cameroons	Port extensions and improvements	29,000.0
Dahomey	Port extensions and improvements	5,000.0
E. African Community	Bulk handling installation	33,738.0
India	Bulk cargo handling improvements	3,875.0

CIDA BILATERAL PROJECTS

Identification - Review - Approval

<p align="center"><u>STAGE 1</u> Identification</p>	<p align="center"><u>STAGE 2</u> Preliminary Analysis</p>	<p align="center"><u>STAGE 3</u> Decision in Principle</p>	<p align="center"><u>STAGE 4</u> Development</p>	<p align="center"><u>STAGE 5</u> Approval</p>
<ul style="list-style-type: none"> • Receipt of project request at Post • Review of project request at Post • Review of project request by Area Division in CIDA • Appointment of Project Leader 	<ul style="list-style-type: none"> • Formation of Project Team • Reconnaissance Survey • Preliminary definition of scope, type and extent of financing, and priority of sector 	<ul style="list-style-type: none"> • Minimum description and analysis considered by Project Review Committee • DECISION to reject or to proceed with development of project prior to any commitment 	<ul style="list-style-type: none"> • Feasibility Study if required • Determination of economic/technical viability of project • Development of project objectives, components, schedule and cost profile • Estimate of project budget in total 	<ul style="list-style-type: none"> • Approval of project by Project Review Committee • Approval of project by President/Minister for implementation • Signing of Loan Agreement or Memorandum of Understanding with recipient government

Note: The implementation and completion of projects are covered on page 2.

August, 1975

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Project Implementation

STAGE 6 Implementation					STAGE 7 Completion
Trainees	Experts	Services	Construction	Equipment/Material	
<ul style="list-style-type: none"> . Review of applications . Review of nominations . Design of Program . Placement of trainee . Offer of training . Clearances and travel arrangements . Reception and briefing . Project administration . Project termination . Debriefing and departure arrangements . Project evaluation 	<ul style="list-style-type: none"> . Review of request for expert services . Recruitment and selection . Clearances and nominations . Contract negotiation . Briefing for contracting . Departure of Expert . Contract administration . Return and debriefing . Project evaluation 	<ul style="list-style-type: none"> . Selection of Consultant . Approval by President/Minister . Contract negotiation . T.B. approval - if required . Contracting and administration . Project evaluation 	<ul style="list-style-type: none"> . Contractor list approval . Proposals solicited . Selection of contractors . Contract negotiation: <ul style="list-style-type: none"> . by CIDA in the case of grant aid . by recipient country in the case of loans . T.B. approval - if required . Contracting and administration . Project evaluation 	<ul style="list-style-type: none"> . Procurement methods . Calls for tender DSS/CCC/CIDA . T.B. approval - if required . Supply contract . Contract administration . Project evaluation 	<ul style="list-style-type: none"> . Evaluation of total project in terms of objectives . Corrective action if necessary . Termination procedures . Liquidation of funds . Transfer of project to recipient country

EXPORT DEVELOPMENT CORPORATION

This section briefly outlines the services made available by the Export Development Corporation for the purpose of facilitating and developing export trade.

The text and data are based on EDC current publications.

EXPORT DEVELOPMENT CORPORATIONObjectives

To provide methods of facilitating and developing export trade through the provision of insurance, guarantees, loans and other financial facilities as follows:

- Export Credits Insurance by insuring Canadian firms against non-payment when Canadian goods and services are sold abroad;
- Export Finance by making loans to foreign buyers of Canadian capital equipment and technical services;
- Guarantees to financial institutions against losses incurred in financing either the Canadian supplier or the foreign buyer in an export transaction;
- Foreign Investment Insurance by insuring Canadians against loss of their investments abroad by reason of political actions.

Export Credits Insurance

EDC may insure Canadian exporters against non-payment when they grant credit to foreign buyers under contracts involving the following classes of export transactions:

- consumer goods sold on short-term credit usual for the particular trade, and which normally ranges from documentary sight draft to a maximum of 180 days;
- capital goods such as heavy machinery sold on medium-term credit which may extend to a maximum of five years;
- services such as the supply of design, engineering, construction, technological, marketing services to a foreign customer, photogrammetric and geophysical surveys, etc.;
- "invisible" exports such as the sale or licensing to a foreign customer of any right in a patent, trademark or copyright, advertising fees, fees to auditors, architectural consultants, etc.

The main risks covered under an EDC Policy are:

- insolvency of the foreign buyer;
- failure of the buyer to pay to the exporter within six months after due date the gross invoice value of goods which he has duly accepted;
- repudiation by the buyer which does not result from a breach of contract by the exporter and where proceedings against the buyer would serve no useful purpose;
- blockage of funds or transfer difficulties which prevent the Canadian exporter from receiving payment;
- war or revolution in the buyer's country;
- cancellation or non-renewal of an export permit and the imposition of restrictions on the export of goods not previously subject to restriction;
- any other cause outside the control of both the exporter and the buyer which arises from events occurring outside Canada and the continental United States of America.

To assist in financing exports, a Policyholder may request EDC to assign the proceeds of any losses payable under a Policy to a bank or to any other lender providing financing in respect of export sales. An exporter may assign an individual bill or may make a blanket assignment of all foreign accounts receivable. As a further aid to financing, EDC may issue unconditional guarantees to financial institutions which have agreed to provide non-recourse supplier financing. Such guarantees may be issued only in respect of insurable sales of capital goods or services.

Contracts of insurance and guarantees are issued under the authority of the Board of Directors. When the amount or term of a credit does not meet the approval of the Board, but the transaction is judged

by the Minister to be in the national interest, contracts may be issued under the authority of the Government.

The overall volume of export credits insurance business underwritten in 1974 was the largest in EDC's history. Total exports insured amounted to \$938,726,000, as compared with \$564,923,000 in 1973. There were 1,037 Policies in force as at December 31, 1974, covering a wide variety of Canadian goods and services exported all over the world.

Export Finance

EDC makes long-term loans directly to foreign borrowers or guarantees private loans to such borrowers to finance Canadian exports of capital equipment and services. EDC financing is provided on commercial terms at internationally-competitive interest rates to permit foreign borrowers to pay cash to Canadian exporters.

To qualify for an EDC loan or guarantee, a transaction must be of a type and for an amount which justifies extended credit terms - that is, beyond five years.

The project must be financially and economically sound and the foreign borrower must be creditworthy. The transaction must provide employment and industrial benefits for Canada as well as give promise for future Canadian exports in the foreign market concerned.

EDC requires that the transaction being financed have a Canadian material and labour content of not less than 80% and that all of the goods and services be exported from Canada. In certain circumstances however, EDC may, in conjunction with financing for Canadian capital equipment and

and services, also lend directly or guarantee a private loan for a portion of the associated local costs in the importing country.

Loans and guarantees are made under the authority of the Board of Directors. In the case of very large export transactions or other special situations considered by the Minister to be in the national interest, loans may be made under the authority of the Government.

Foreign Investment Insurance

EDC is able to offer protection to Canadian businessmen, who invest abroad, by providing insurance against risk of loss due to the political events of expropriation, war or insurrection, or the inability to repatriate funds. The program covers almost any right that an investor might acquire in a foreign enterprise, including equity, loans, management contracts, royalty and licencing agreements. Investment may be in the form of cash, contribution in kind, or the issuance of a guarantee. The investment can be made directly in a foreign enterprise or indirectly through a related company based in Canada, the host country or even a third country.

Coverage under a Policy can have a term of up to fifteen years and can be cancelled only by the investor, and not by EDC, as long as the conditions of the Policy are maintained. The rate of premium is 1% per annum. The investor has a wide range of flexibility in his selection of coverage. This allows him to cover only those assets that he actually has at risk. He may elect to insure for one or more of the political events of expropriation, war and insurrection or inconvertibility. This choice of coverage usually results in a substantial reduction in the premium costs to the

investor, and in most instances will be well under the 1% premium rate.

The program is designed to place Canadian investors in a position of competitive equality to nationals of other countries which have similar schemes and thus help to maintain or enhance Canada's trade position. An additional role is the promotion of Canadian private sector involvement in the industrial growth of developing countries. Joint venture participation with nationals of the host country is encouraged under the program.

In comparing the operations of the Export Development Corporation (EDC) and the Canadian International Development Agency (CIDA) it can be said that EDC functions on the basis of trade and that CIDA operations are based on aid.

The EDC Board of Directors has set no special territorial priorities, but there are countries of specific interest such as China, Cuba, Indonesia, Poland and U.S.S.R. On the basis of protocol understandings, Shopping Lists for goods and services may be developed. In normal circumstances these lists will be made up of foreseen requirements which will benefit both the recipient country and the Canadian economy. Emphasis is placed on commercial projects which, within the country concerned, will generate adequate revenue. However, in addition to protocol agreements which focus on specific market areas, the principal volume of EDC business is directed toward established markets.

CANADIAN CAPABILITIES

This section reviews Canadian capabilities under the following main headings:

Research and Laboratory Facilities

Consulting and Engineering

Construction, Manufacturing and Installation

Port and Harbour Mobile Equipment

Canadian Projects

Brief explanatory notes preface each of the five sub-sections.

RESEARCH AND LABORATORY FACILITIES

This sub-section details principal Canadian Laboratories which specialize or have a capability in hydraulics and associated sciences. There are also several universities with well-equipped facilities which may be available under contract.

Except in cases of bilateral technological aid, it is unlikely that most Canadian Laboratories will participate directly in foreign port and harbour development - Acres being the notable exception.

National Research Council of Canada	Ottawa, Ontario
The Acres Group	Niagara Falls, Ontario
Bedford Institute of Oceanography	Dartmouth, Nova Scotia
Canadian Centre for Inland Waters	Burlington, Ontario
LaSalle Hydraulic Laboratory Ltd.	LaSalle, Quebec
Northwest Hydraulic Consultants Ltd.	Edmonton, Alberta
Ontario Hydro	Toronto, Ontario
Western Canada Hydraulic Laboratories Ltd.	Port Coquitlam, British Columbia

HYDRAULIC LABORATORIES

National Research Council (NRC)

Some 35 people including scientific engineers and technicians are employed in the NRC Hydraulics Laboratory. It is the most comprehensive and advanced source of marine technology in Canada. Because of its technical scope and physical size, NRC laboratory services are in constant and heavy demand.

In common with other government laboratories the present NRC policy is to farm out and direct tasks wherever possible to other and smaller laboratories in the private sector.

The Hydraulics Laboratory is at present carrying out work for NHB, DPW and DREE, as well as industrial projects for Imperial Oil, Sedco and consultants. No offshore (that is foreign) work is undertaken.

Some of the major studies related to port and harbour construction are as follows:

Beach Erosion Study

Wave Forces on Structures

Random Wave Signal Generation by Mini-Computer

Flow Patterns Produced by Air Bubbles for Melting Ice

Wave Investigation and Measurement

The importance of the St. Lawrence River Ship Channel is well known and a comprehensive study of this large and complicated estuary was constructed. A further study of the River East of Québec City is now being carried out.

The Hydraulics Laboratory continues to be closely associated with Canadian industry and a partial list of the various technical areas involved is as follows:

Stevenson, Hardtke

- Numerical simulation of flow in
Sept Isles Bay for Iron Ore Company
of Canada

- | | |
|--------------------------------------|--|
| Howe International Ltd. | - Hydraulic Model study of
Visakhapatnam Harbour |
| George Welk Ltd. | - Wave recording instrumentation |
| Swan Wooster
Engineering Co. Ltd. | - Wave records for several loca-
tions in Canada |
| Montreal Engineering Ltd. | - Consulting on numerical simulations
of rivers |
| Acres Consulting
Engineers | - Velocity measurements in Lower
St. Lawrence River |
| Gulf Oil Canada Ltd. | - Containment of oil spills |

It is unlikely that the total private sector in Canada will in the near future equal the capabilities of the NRC. Major increases in marine hydraulic technology will continue to be advanced by the Montreal Road Laboratory.

A review of the capabilities of principal Canadian marine hydraulic and associated laboratories follows.

The Acres Group

The internationally prestigious Acres Group of companies provides consulting, engineering, economic and planning services in widely diversified fields of activity. It commenced business in 1924 and the total staff group numbers more than 1,000 people. Insofar as port and harbour development and construction are concerned, Acres' professional engineers have long-term experience in the fields of Civil, Hydraulic, Marine, Mechanical, Structural and Transportation engineering. The staff includes geographers, marine technologists, economists and systems analysts.

Related to port and harbour development the Laboratories have the capability for physical modelling to scale, soil and rock mechanics testing, hydraulic and civil design evaluation and physical analyses. Moreover, scale models can be prepared of river basins, canals, dams and other structures and facilities.

In the field of Hydraulic Modelling, tests on models of complex hydraulic systems such as spillways, control and diversion structures and tunnels for hydro-electric developments are used to optimize designs, calibrate structures, investigate energy losses, flow patterns, air entrainment, cavitation, bed erosion, energy dissipation and hydraulic loading.

For wave action and tidal current modelling, models of coastal regions in which wave trains and tidal currents are reproduced to scale are used to determine the effects of topographical changes on coastal erosion and wave loading.

The Acres Navigation Channel Modelling program conducts model studies of ship navigation problems to improve and stabilize the flow conditions in the navigational channels. Radio-controlled ships are used to gauge the degree of improvement obtained.

A brief sampling of some of the international marine projects undertaken by this prominent Group is as follows:

Government of Taiwan:

Feasibility study for dry dock and shipyard facilities for the construction of supertankers to 300,000 dwt at Kaohsiung, Taiwan

Split Shipyard, Yugoslavia:

Engineering evaluation and preparation of cost estimates for proposed shipyard expansion for construction of supertankers at Split

King Shin Group, Seoul, Korea:

Feasibility study for a shipyard and dry dock at Pusan, Korea

Research Project:

Conceptual engineering studies for an offshore arctic oil exploration drilling platform

Argentina:

Dredging and revetment works for the navigation channel between Buenos Aires and Parana de las Palmas River

Brazil:

Engineering consultation for the design and specification for bulk materials handling associated with an Iron Ore Concentrating facility in Itabira Mira Gerais

Thailand:

Hydraulic model studies to investigate the effects on irrigation and navigation downstream of the Sirikit Development, Thailand

U.S. Corps of Engineers:

St. Clair-Detroit River system study for winter navigation

Government of Newfoundland:

Preliminary engineering for a steel receiving wharf

Dominion Foundries and Steel Limited:

Feasibility study and preliminary design for harbour and material handling facilities at Port Burwell, Lake Erie

Ashland Oil Incorporated:

Feasibility study and preliminary engineering for an oil marine terminal on the St. Lawrence River

National Harbours Board:

Evaluation of a proposed marine terminal development for forest products and automobiles

Department of Economic Growth, New Brunswick:

Study of a wharf-mounted dredging system

The St. Lawrence Seaway Authority, Montreal, Quebec:

Hydraulic model studies of a proposed new discharge system for Lock 7 on the Welland Canal, Ontario

Bedford Institute of Oceanography

The Bedford Institute is a Canadian Government establishment and consists of three main units:

Atlantic Oceanographic Laboratory

Marine College Laboratory

Atlantic Geoscience Centre

It follows that the Oceanographic Laboratory is more closely concerned with matters related to port and harbour development. In terms of coastal engineering and development, the Laboratory provides information and advice environmental conditions rather than being directly concerned with engineering structures and related forces.

The Laboratory recognizes developing countries as an area of growing responsibility and one with which it already has some involvement. This involvement thus far includes training people at the Bedford Institute and conducting surveys overseas in co-operation with local authorities.

Stemming from the Federal Government's new "make or buy" policy, Institute contacts with industry now cover a wide range of activities and can be divided into four main categories:

Outside service giving support to projects carried out by Institute staff, e.g. equipment maintenance

Contract research for design and development of new equipment

Transfer of new designs of equipment and new techniques from the Institute to world markets

Consulting services drawing upon experts available at the Institute

The Bedford Institute of Oceanography is involved with local industry in several aspects of its work. The relationship will develop on a broader base under the Government's breakout policy.

The assistance which Canadian industry may derive from the Bedford Institute will stem primarily from its Oceanographic Laboratories. In the context of port and harbour development, consulting and engineering skills in Canada can be upgraded through Institute assistance and co-operation. In particular, technology associated with coastal engineering, breakwater construction, pollution control and dredging will be the most fruitful areas for consultation.

Canadian Centre for Inland Waters

The Centre is established at Burlington, Ontario and falls within the jurisdiction of the Department of the Environment. Its prime concern is to undertake research on those subjects which are within the responsibilities of that Department.

The Hydraulics Division has a Wind-Wave Flume which, as far as is known, is unique in Canada; it is used for wave and coastal engineering studies. A policy for making the Flume available on contract and on a limited basis is being reviewed. Charges for its use may be in the order of \$800 per day.

The Hydraulics Laboratory uses a wide range of equipment including:

Towing Tank	Wind-Wave Flume
Dispersion Tanks	Environmental Rooms
Clear Water Recirculating and Sediment Flumes	

The towing tank is a notable feature; coupled with the wind-wave flume, the Laboratory provides an impressive level of hydraulic technology. The tank was specially designed to run very slowly at precise speed and the latter provides accurate means to undertake research in waves and their effects.

Under the present policy the Hydraulic Laboratory will continue to give first priority to its own Departmental requirements. However, in the longer term, consultants and engineering companies may well be able to utilize some of its unique features on a contract basis.

LaSalle Hydraulic Laboratory Ltd.

The LaSalle Laboratory in Montreal is a privately-owned firm of consulting engineers. Total employment is in the order of 25 to 30 people of which seven are professionals. The Laboratory is active in all branches of hydraulics and the associated field of fluid mechanics.

In relation to port and harbour development, LaSalle's capabilities include river improvement, resolution of navigational problems and coastal improvements. Additionally, the company carries out model studies and its engineers have undertaken several hydraulic design studies on solids pipelining, irrigation and hydrology.

Fields of activity include:

Design of Marinas	Navigational Studies
Lock and Channel Design	Navigation and Ice Problems
Breakwater Stability	Damming and River Training
Shoreline Protection	Port Protection Against Waves

LaSalle Hydraulic Laboratory provides a team of specialist engineers and technologists. It also has an agreement with Société Grenobloise des Etudes et Applications Hydrauliques - SOGREAH - for the exchange of technical data as well as services of additional experts if needed.

One of the company principals has spent upwards of two years training with SOGREAH becoming familiar with methods of directing and co-ordinating studies to establish international standards thus providing a basis for offshore projects.

Northwest Hydraulic Consultants

This firm is established in Edmonton and Vancouver. It is a small and highly-specialized consultant company of 35 people including 18 professionals which has recently expanded its capabilities into the area of coastal engineering. In so doing it hopes to broaden its Canadian base and develop foreign business.

Northwest's essential talents are in those areas related to river resource development. Its capabilities include:

Resource evaluation	Hydraulic engineering
River engineering	Applied research
Hydrology	Hydraulic model testing
Hydraulic structure design	Field survey and inspection

The scope of services ranges from specialized input provided to general engineering consultants and includes planning and hydraulic design and implementation of major hydraulic engineering projects.

The company's skills in handling river engineering problems is complemented by its hydraulic model testing services and its field service and inspection capabilities. Similarly, the area of hydraulic structures and analysis and design is also supported by a model testing facility. Among the many projects undertaken by Northwest Hydraulic Consultants are:

- Navigation on Niger River
- River Training on Brahmaputra-Jamuna in Bangladesh
- On-Site Hydrology Review in Venezuela
- On-Farm Water Management in Pakistan
- Passamaquoddy Tidal Scheme Model Study
- St. Lawrence Seaway Locks Model Study
- Port Alberni Harbour, B.C. Tidal Model

In expressing its interest in foreign opportunities, Northwest advised that it is able to carry out special assignments in Canada, such as hydraulic model study of port area navigation works, which might not be done offshore due to lack of laboratory facilities.

Ontario Hydro Hydraulic Model Laboratory

Established at University Avenue in Toronto this Laboratory of 38,000 square feet employs a total of twenty people of whom seven are professionals. The Laboratory has for its exclusive use a Non-Linear Systems data acquisition and processing system.

The Laboratory is normally engaged in project work to provide data and background information for the design and construction of new generating capacity.

The Ontario Laboratory has expertise to carry out work on a broad range of problems related to hydraulic engineering. Thus far it has not undertaken studies specifically concerned with port and harbour development.

On occasion the Laboratory carries out work for outside organizations such as other Canadian public utilities. However, we note that outside work is only contracted when spare capacity is available beyond Ontario Hydro's needs. Because of the continuing high demand made on Laboratory facilities by its own organization, the level of outside work undertaken will continue to be fairly low.

Western Canada Hydraulic Laboratories Ltd.

These Laboratories were set up at Port Coquitlam in 1962 to provide consulting services and applied research facilities in British Columbia. Its studies are mainly concerned with hydraulics including the investigation of hydro-electric river, harbour and coastal development. The Laboratory provides speciality consulting services and model testing for:

Site selection	Protection requirements
Foreshore stability	Harbour layout

Recent assignments in coastal engineering and associated hydraulics within British Columbia include:

- Feasibility study and breakwater design
- Harbour protection and foreshore erosion study
- Beach stability studies - DPW/Pacific Environment Institute
(P.E. Inst.)
- Breakwater and harbour protection studies - DPW/P.E. Inst.
- Floating breakwater study - DPW
- Investigation of tidal currents - NHB
- Wind, wave and tidal current studies - DPW and Province of B.C.

In addition to the above projects related to provincial requirements, the Western Canada Hydraulic Laboratory has undertaken penstock research for the Hartza Engineering Company in the U.S.A. and a spillway study project for Thailand. The principals have expressed interest in international projects.

CONSULTING - DESIGN ENGINEERING - PLANNING

Consulting, Design Engineering and Planning capabilities are shown in tabulated form. The column headings represent the principal elements of port and harbour design, engineering, planning and management. Others come to mind; for example roll-on/roll-off (often combined with container terminal operations) and specialized wood products terminals. It follows that Canadian consultants of proven capabilities would readily cope with special requirements.

Many consultant companies have affiliates and inter-company arrangements for mutual co-operation. On that basis they successfully operate nationally and internationally. Initially over 130 firms were reviewed and 85 completed returns were received.

The detailed analyses which follow have been compiled strictly in accordance with information supplied by the companies. We do not accept responsibility for inaccurate claims to any specific capability.

PORT AND HARBOUR DEVELOPMENT

Consulting - Design Engineering - Planning

	BULK TERMINALS	CONTAINER TERMINALS	FISH HANDLING TERMINALS	GENERAL CARGO TERMINALS	GRAIN TERMINALS	LNG & LPG TERMINALS	MARINAS	OFFSHORE TERMINALS	OIL TERMINALS	WHARVES & BERTHS	INDUSTRIAL ZONE PLANNING	BREAKWATERS	COASTAL ENGINEERING	DREDGING	DRYDOCKS - MARINE ELEVATORS	HYDRAULICS	LOCKS & GATES	MOORING & FENDERING SYSTEMS	PIPELINES	ROADS, RAILWAYS, BRIDGES	SHEDS - TRANSIT - STORAGE	SOIL MECHANICS	SURVEYS - SEISMIC-PROFILE - MAP	ELECTRONIC & MECHANICAL SYSTEMS	INT-MODAL TRANSP. ECONOMICS	MAINTENANCE & SECURITY	ORG, MGMT & SECURITY	MARKET & INSP SYSTEMS	MATHEM MODELS & FEASIBILITY STUDIES	NAVIGATION SYSTEMS & SIMULATION	POLLUTION & ENVIRONMENT PROTECTION	PORT ECONOMICS	PROJ FUNDING & FINL SYSTEMS	SYSTEMS ANALYSIS	VESSEL & TRAFFIC MANAGEMENT	
N.D.Lea & Associates Ltd.							X		X											X			X											X	X	
Leclair,Riel,Dionne & Associés									X												X															
Marshall Macklin Monaghan Limited							X								X				X	X									X							
Urban F. McCullough	X		X			X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X													
McElahnney Surveying & Engineering Ltd.	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X							X							
Menard & Marsan				X				X	X						X	X	X	X	X	X	X	X							X							
Montréal Engineering Company Limited		X		X					X	X		X			X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Morrison,Hershfield,Theakston & Rowan Limited									X											X																
R.J.Noah & Associates Ltd.							X		X		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Overseas Consultants	X	X	X	X	X	X	X		X					X	X	X	X	X	X	X	X	X	X				X							X	X	
C.C.Parker and Associates Limited	X	X		X			X	X	X			X						X	X	X	X								X							
Peat Marwick and Partners	X	X		X	X		X									X		X	X					X						X	X	X	X	X	X	
Pelletier Engineering (International) Limited				X	X										X				X		X		X					X								
Per Hall Associates Ltd.	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Phillips Barratt	X	X	X	X		X	X	X	X	X		X	X				X	X	X	X	X	X				X			X							
T. Fringle & Son Limited	X	X	X	X	X				X	X				X					X	X									X							
Project Planning Associates Limited							X		X			X			X		X	X	X	X								X								
Racey,MacCallum & Bluteau Ltd.	X	X	X	X	X	X	X	X	X	X		X			X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Reid,Crowther & Partners Limited	X	X		X			X	X	X	X		X			X		X	X	X	X	X	X						X		X						
J.L. Richards & Associates Limited							X		X		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
G.I.Russell & Company Ltd.																			X							X										
W. Sefton & Associates Ltd.	X						X	X	X			X		X	X	X	X	X	X	X	X	X								X						

PORT AND HARBOUR DEVELOPMENT

Consulting - Design Engineering - Planning

	BULK TERMINALS	CONTAINER TERMINALS	FISH HANDLING TERMINALS	GENERAL CARGO TERMINALS	GRAIN TERMINALS	LNG & LPG TERMINALS	MARINAS	OFFSHORE TERMINALS	OIL TERMINALS	WHARVES & BERTHS	INDUSTRIAL ZONE PLANNING	BREAKWATERS	COASTAL ENGINEERING	DREDGING	DRYDOCKS - MARINE ELEVATORS	HYDRAULICS	LOCKS & GATES	MOORING & FENDERING SYSTEMS	PIPELINES	ROADS, RAILWAYS, BRIDGES	SHEDS - TRANSIT - STORAGE	SOIL MECHANICS	SURVEYS - SEISMIC-PROFILE - MAP	ELECTRONIC & MECHANICAL SYSTEMS	INT-NODAL TRANSP. ECONOMICS	MAINTENANCE & SECURITY	ORG, MGMT & INSP SYSTEMS	MARKET & FEASIBILITY STUDIES	MATHEM MODELS & SIMULATION	NAVIGATION SYSTEMS	POLLUTION & ENVIRON PROTECTION	PORT ECONOMICS	PROJ FUNDING & FILE SYSTEMS	SYSTEMS ANALYSIS	VESSEL & TRAFFIC MANAGEMENT					
The Shawinigan Engineering Company Limited	X	X	X	X	X	X		X	X	X		X		X	X	X	X	X	X	X	X	X			X		X	X			X									
H.A.Simons (International) Limited	X	X	X	X	X		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		X	X	X		X	X	X	X	X	X	X	X	X			
Stevenson Hardtke Associates Limited	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X				X	X	X		X	X	X		X	X	X	X	X	X	X	X	X			
Stevenson Kellogg, Ltd.	X	X	X	X	X		X	X	X												X	X			X	X					X	X	X	X	X	X	X			
Stothert Engineering Ltd.	X	X		X			X			X				X	X	X		X	X		X				X				X			X	X	X	X	X	X			
Surveyer, Nenniger & Chênevert Inc.	X	X	X	X	X	X		X	X	X		X	X	X	X	X	X	X	X	X	X	X	X		X	X			X	X		X	X	X	X	X	X			
Swa: Wooster Engineering Co. Ltd.	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		X	X	X		X	X	X	X	X	X	X	X	X	X		
Tamcon Consultants	X			X			X		X	X		X			X	X	X	X	X	X	X	X			X				X				X							
Tecsult International Limitée	X			X	X		X			X		X	X	X						X	X	X		X				X	X	X										
Terratech Ltd.																							X				X													
Tottrup & Associates Limited	X	X	X	X	X	X		X	X	X					X		X	X	X	X	X	X				X														
William Trow Associates Limited															X								X			X														
Vandry, Jobin & Associés	X			X					X			X	X		X		X		X	X	X	X				X	X													
J. Philip Vaughan and Associates Limited				X					X			X	X	X	X	X	X	X	X	X	X	X	X			X			X											
R.G.Watson Co.Ltd.					X																		X																	
Whitman, Benn & Associates Limited	X	X	X	X		X	X	X	X	X		X			X		X		X	X	X	X				X			X											
Wright Engineers Limited	X				X				X									X													X									

CONSULTING - DESIGN ENGINEERING - PLANNING

Overseas Activity

COMPANY

COUNTRY

PROJECT

Acres

Brazil	Engineering	-	navigational channel dredging and revetment
Brazil	Consultation	-	for design and specification bulk iron ore facility
Caribbean	Pre-Eng.	-	feasibility study for shipyard for 500,000 dwt tankers
East Pakistan	Engineering	-	Jamuna River crossing hydro towers
Ghana	Study	-	Volta River hydro-electric system environmental effects
Taiwan	Study	-	drydock and supertanker shipyard facilities
Thailand	Studies	-	Sirikit Development hydraulic models
Turkey	Engineering	-	Ceyhan River dam design and specification
South Korea	Engineering	-	proposed shipyard and drydock for supertankers
U.S.A.	Study	-	St. Clair - Detroit River system winter navigation
U.S.A.	Model Study	-	Cayuga Lake thermal hydraulic model
U.S.Army	Review	-	Ellicott Creek flood control
Yugoslavia	Engineering	-	proposed shipyard and expansion for supertankers

<u>COMPANY</u>	<u>COUNTRY</u>		<u>PROJECT</u>
Albery, Pullerits, Dickson	Dominican Rep.	Study	- expansion of Port of Haina sponsored by IADB
	Haiti	Planning	- Port-au-Prince port development project
	Indonesia	Design	- terminal for tankers up to 30,000 dwt
	Iran	Design	- new water supply system for the capital city Tehran
	U.S.A.	Study	- economic study for VLCC terminal at L.A.
	Venezuela	Study	- port study sponsored by Carib. Dev. Bank
	Yemen	Study	- new fishing harbour (Canplan)
Alcan Shipping Services	Arabian Gulf	Study	- organization of national flag shipping company
Beauchemin-Beaton-Lapointe	U.A. Emirates	Eng.Supervn.	- navigational channel, planning, design, constr. supervn.
	Cameroons	Study	- railway and port estimates for CIDA
Beaulieu, Poulin, Robitaille	Algeria	Engineering	- fishing school and marine market at Bou-Ismaïl
Cansult Limited	U.A. Emirates	Consult Eng.	- land, sea and air projects at Abu Dhabi
The Canplan Group	Guyana	Engineering	- fish process plant and fleet service facilities
	Haiti	Study	- evaluation of facilities, berthing, cargo handling and design preparation

<u>COMPANY</u>	<u>COUNTRY</u>		<u>PROJECT</u>
The Canplan Group	West Indies	Engineering	- fisheries development plant, shrimp process & freezing plant
	Yemen	Engineering	- fish processing, cold storage and harbour development plan
Carr & Donald	Australia	Eng. Study	- iron ore shipping terminal at Port Hedland
	Brazil	Eng. Study	- iron ore shipping terminal at Sepetiba Bay
	Brazil	Eng. Study	- iron ore shipping terminal Brazil Mineral Company
	Brazil	Eng. Study	- mod. to iron ore shipping terminal for Rio P.A.
	U.S.A.	Eng. Study	- oil terminal at Camden N.J.
	U.S.A.	Eng. Study	- iron ore terminal modernization Conneaut, Ohio
	U.S.A.	Eng. Study	- coal marine terminal at Pascagoula
	U.S.A.	Prelim. Study	- Lost River marine terminal and transportation study
	U.S.A.	Eng. Study	- Atlantic Coast oil trans-shipment terminal
	U.S.A.	Study	- Chester Tidewater tanker marine terminal study
	U.S.A.	Eng. Study	- trans-shipping marine terminal at Perth Amboy, N.J.
	Venezuela	Evaluation	- Puerto Caballo liquid receiving marine terminal
	West Indies	Dev. Study	- Guadeloupe marina development study

<u>COMPANY</u>	<u>COUNTRY</u>		<u>PROJECT</u>
FENCO	Azores	Design Eng.	- steel towers supporting deepwater boring equipment (Geocon)
	Costa Rica	Study	- extension of port facilities Puerto de Limon
	Sierra Leone	Study	- land reclamation and delta improvements
	West Indies	Design Eng.	- reconstruction of bauxite terminal wharf Chaguaramas
Golder Associates	Haiti	Engineering	- general marine works and dock extensions
	Kuwait	Engineering	- general marine works and dock extensions at Port of Kuwait
	West Indies	Engineering	- dock extensions marine works at St. Lucia
Hatch Associates	Korea	Study	- smelter refinery complex, dock and handling system
	Norway	Study	- proposed coal wharf at Jossingfiord in Norway
Howe International	Argentina	Design Eng.	- five major grain export terminals
	Brazil	Design Eng.	- new iron ore terminal at Tubarao
	Eire	Feasibility Study	- coal handling study for Port of Dublin
	El Salvador	Design Eng.	- Acajutla Port breakwater and additional berths
	England	Study	- comprehensive study for additional grain handling facilities Port of London
	England	Eng. Study	- Liverpool grain terminal improvements and extensions
	England	Feasibility Study	- bulk grain terminal at Seaforth for 70,000 dwt vessels

<u>COMPANY</u>	<u>COUNTRY</u>		<u>PROJECT</u>
Howe International	India	Design Eng.	- Visakhapatnam Port, increasing iron ore export capacity
	India	Design Eng.	- outer harbour development at Visakhapatnam
	India	Master Plan	- new outer harbour at Madras for ore bulk and oil
	India	Design Eng.	- port improvements and iron ore terminal at Mormugao
	India	Feasibility Study-	determining port suitability for loading bulk fertilizer
	India	Feasibility Study-	fishing harbour as part of Visakhapatnam port extensions
	India	Engineering Study-	oil terminal extension and modification at Paradip Port
	Iran	Design Eng.	- new grain terminal at Bandar Shahpour
	Netherlands	Preliminary Des.	- grain terminal improvement at Rotterdam for 65,000 dwt vessels
	U.S.A.	Design Eng.	- Long Beach petroleum coke storing and handling facility
Industran Services	Algeria	Analysis	- Algerian ports operations and recommendations for improvement (UNCTAD)
	U.S.A.	Eng. Design	- container terminal, preliminary design at New Jersey
	U.S.A.	Inspection	- operation of container terminals and use of straddle carriers
	West Indies	Study	- analysis and planning for Carib. Cement in Jamaica
	West Indies	Study	- operational improvement, facilities design, equipment selection Port of Spain

<u>COMPANY</u>	<u>COUNTRY</u>	<u>PROJECT</u>
N.D. Lea & Associates	Thailand	Economic Study - assessment of waterway multi-modal transport system
Lamarre Valois	Malagasy	Study - construction and repair of dry dock for 500,000 dwt tankers
McElhanney Surveying & Eng.	U.S.A.	Preliminary design - Valdez deepsea berthing for 300,000 dwt tankers
Marshall, Macklin, Monaghan	U.A. Emirates	Supervision - Muqta Bridge at Abu Dhabi (Cansult)
Montreal Engineering	Singapore	Design Eng. - unloading terminal for 100,000 dwt oil tankers
R.J. Noah	Shri Lanka	Design Eng. - Mutwal fish plant in Colombo
Project Planning Associates	Hong Kong	Design Supvn. - creation of marina with recreational facilities
	Malagasy	Master Plan - new port community of Narinda (UNDP)
	Monaco	Feas. Study - berths, tourists facilities and waterfront development
	Panama	Feas. Analysis - transportation and development corridor, cargo handling techniques
	Kuwait	Eng. Design - waterfront development project
	Kuwait	Study - non-tidal recreational basin Sulaibikhat Bay
	Somalia	Study - deep water, coastal and inland waterways
	Tanzania	Master Plan - capital of Dar es Salaam Inc. port areas

<u>COMPANY</u>	<u>COUNTRY</u>		<u>PROJECT</u>
C.C. Parker and Associates	Trinidad	Study	- Port of Spain improvement inc. organization, admin, financial aspects
Reid, Crowther & Partners	Bahamas	Study	- mining, loading, shipping of Aragonite Sands
	Jamaica	Study	- Kingston and St. Andrews harbour pollution study
Shawinigan Engineering	India	Design Eng.	- reinforced concrete jetty and pump at Trombay
Stevenson & Kellogg	Peru	Planning	- new fishing port, plant and town site
Stothert Engineering	Nigeria	Design & Constr.	- pulp mill involving shipping facility at Iwopin, Lagos
Swan Wooster Engineering	Arab Rep.	Design & Supvn.	- port terminal, bulk loading facility at Salif
	Bahamas	Design & Supvn.	- Sandy Cay offshore island bulk port terminal
	Brazil	Design & Eng.	- large iron ore port at Belem Amazon Delta
	Chile	Plan. & Des.	- new iron ore terminal at Guacolda with loading facilities
	East Africa	Design & Insp.	- dockside cranes for Mombasa, Dar es Salaam and Tanga
	El Salvador	Design & Supvn.	- Acajutla new berths and bulk loading/unloading facilities
	Indonesia	Master Plan	- re-organization of port of Tanjung Priok
	Pakistan	Design & Supvn.	- coal and iron ore unloading system at Karachi
	Philippines	Design & Supvn.	- copper concentrate pier and ship loader Marinduque
	South Africa	Design Eng.	- bulk coal export terminal with material handling systems
U.S.A.	Design Eng.	- New Orleans bulk products terminal	
U.S.A.	Design Supvn.	- Sacramento bulk port terminal handling systems	

<u>COMPANY</u>	<u>COUNTRY</u>	<u>PROJECT</u>
Stevenson Hardtke	Barbados	Plan. & pre-Eng. - port expansion study at Bridgetown
	Guatemala	Layout - port of San Jose improvement
	Jamaica	Study, Des.& Supvn.- coastal development and land reclamation Montego Bay
	Kuwait	Design Eng. - new harbour construction at Dhow Harbour
	U.S.A.	Design Supvn. - container terminal at Jersey City
	U.S.A.	Design Supvn. - phosphate marine terminal with cellular dock
	West Indies	Study - beach erosion, stability and development studies
	West Indies	Study, Des.& Supvn.- land reclamation and resort complex Rodney Bay S. Lucia
	H.A. Simons	Equador
Guyana		Feas. Study - docks and townsite with materials handling system for wood products
Korea		Study - deepsea harbour facility and transportation network
Peru		Feas. Study - harbour, shiploading, railroad and infrastructures Minero Peru
U.S.A.		Design Eng. - automated fast truck dumper system for Eureka
Surveyer, Nenniger & Chenevert	Abu Dhabi	Survey & Design - soils investigation, survey and design of facilities
	Nigeria	Study & Design - soils investigation and design for Nigerian delta ports
	Senegal	Study - navigability study for river ports
	U.S.A.	Design Eng. - design of 400 ton per hour ship loader and reclaimer Cleveland

<u>COMPANY</u>	<u>COUNTRY</u>	<u>PROJECT</u>	
Terratech	Abu Dhabi	Soils Investgn.	- for a proposed deep water port Abu Dhabi Harbour
Tescult TIL/ABBDL	Bangladesh	Study	- port facilities and ocean-going hopper dredge
William Trow Associates	Jamaica	Analysis	- soils investigation and analysis for wharf site
	Singapore	Analysis	- foundation investigation for a harbour wharf extension
Wright Engineers Limited	Argentina	Eng. Study	- ten million ton coal terminal at Punta Loyola
	Bolivia	Design & Supvn.	- bulk terminal installation at Lake Titicaca
	Brazil	Eng. Study	- bulk handling facilities at six ports
	Malaysia	Eng. Study	- bulk products loading and unloading at Penang
	Mauritania	Eng. Study	- floating self-propelled wharf and shipping loader
	Peru	Eng. & Ec. Study	- new and improved ports on Amazon River
	Peru	Eng. Study	- preliminary engineering for deepsea terminal at Callao
	Peru	Preliminary Study	- small bulk fish meal terminal at Pisco
Venezuela	Eng. Study	- new bulk fertilizer import and export facility	

PORT and HARBOUR DEVELOPMENTConsulting - Design Engineering - PlanningALBERTA

Angus, Butler Engineering Ltd.	Edmonton
L.G. Grimble & Associates Limited	Edmonton
Overseas Consultants	Calgary
Reid, Crowther & Partners Limited	Calgary

BRITISH COLUMBIA

CBA Engineering Limited	Vancouver
Choukalos Woodburn McKenzie Maranda Ltd.	Vancouver
Intercontinental Engineering Limited	Vancouver
Klohn Leonoff Consultants Ltd.	Vancouver
N.D. Lea & Associates Ltd.	Vancouver
McElhanney Surveying & Engineering Ltd.	Vancouver
Phillips, Barratt, Hillier, Jones and Partners	Vancouver
H.A. Simons (International) Ltd.	Vancouver
Stothert Engineering Ltd.	Vancouver
Swan Wooster Engineering Co. Ltd.	Vancouver
Wright Engineers Limited	Vancouver

NEW BRUNSWICK

W.H. Crandall & Associates (Management) Ltd.	Moncton
Eastern Designers & Company Limited	Fredericton

NEWFOUNDLAND

R. J. Noah & Associates Ltd.	St. John's
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NOVA SCOTIA

The Canplan Group	Halifax
Integrated Survey Systems Limited	Halifax
J. Philip Vaughan and Associates Limited	Halifax
Whitman, Benn & Associates (1969) Limited	Halifax
J.D. Koppernaes Engineering Ltd.	Halifax

ONTARIO

Acres International Limited	Toronto
Albery, Pullerits, Dickson & Associates Ltd.	Don Mills
M.R. Byrne & Associates Limited	Burlington
Cansult Limited	Ottawa
Carr & Donald & Associates	Toronto
W.O. Chisholm and Associates (Eastern) Limited	Scarborough
Cole, Sherman & Associates Limited	Willowdale
Crysler & Lathem	Willowdale
Delcanada International Ltd. (DeLeuw Cather)	Ottawa
DeLeuw Cather	Don Mills
Dominion Soil Investigation Limited	Scarborough
FENCO Foundation of Canada Engineering Corp. Ltd.	Toronto
Giffels, Davis & Jorgensen Ltd.	Rexdale
Golder Associates	Mississauga
Hatch Associates Ltd.	Toronto
Howe International Limited	Thunder Bay
Kilborn Engineering Ltd.	Toronto
Marshall Macklin Monaghan Limited	Don Mills
Morrison, Hershfield, Theakston & Rowan, Limited	Guelph
C.C. Parker & Associates Limited	Hamilton
Peat Marwick and Partners	Toronto
Project Planning Associates Limited	Toronto
J.L. Richards & Associates Limited	Ottawa
G.I. Russell & Company Ltd.	Burlington
W. Sefton & Associates Ltd.	Toronto
Stevenson Hardtke Associates Limited	Willowdale
Stevenson & Kellogg Ltd.	Ottawa
Tottrup & Associates Limited	Mississauga
Willian Trow Associates Limited	Rexdale
R.G. Watson Co. Ltd.	Toronto

QUEBEC

Alcan Shipping Services Limited	Montréal
Archer, Seaden & Associés	Montréal
Les Ingénieurs-Conseils Arsenault, Garneau Villeneuve et Associés	Montréal

QUEBEC (cont'd)

Beauchemin-Beaton-Lapointe Inc.	Montréal
Bertech Marine	Québec
Beaulieu, Poulin, Robitaille and Associés	Québec
B.M.R.D. International Ltd.	Laval
Canadian Pacific Consulting Services Ltd.	Montréal
La Société d'Ingénierie Cartier Limitée	Montréal
Central Désign & Drafting Ltd.	Montréal
Desjarding & Sauriol & Associés	Ville de Laval
Ewart, Tremblay et Associés	Montréal
Gendron Lefebvre Inc.	Laval
Geocon Ltd.	Dorval
Industran Services Limited	West Roxboro
Gunnar A. Jacobson Associates	Montréal
Lalonde, Girouard, Letendre & Associates	Montréal
Lamarre, Valois International Limited	Montréal
Leclair, Riel, Dionne & Associés	Montréal
Urban F. McCullough	Beaconsfield
Menard & Marsan	Rimouski
Montréal Engineering Company, Limited	Montréal
Pelletier Engineering (International) Limited	Montréal
Per Hall Associates Ltd.	Montréal
T. Pringle & Son Limited	Montréal
Racey, MacCallum & Bluteau Ltd.	Montréal
The Shawinigan Engineering Company Limited	Montréal
Surveyer, Nenniger & Chênevert Inc.	Montréal
Tamcon Consultants	Montréal
Tecsult International Limitée	Montréal
Terratech Ltd.	Montréal
Vandry, Jobin & Associés	Québec

CONSTRUCTION - MANUFACTURING - INSTALLATION

Canadian industrial capabilities in construction, manufacturing and installation are detailed in the following pages. The headings have been developed with the assistance of:

National Harbours Board

Department of Public Works

Ministry of Transport

Construction Association of Canada

Machinery Branch, IT&C

Resource Industries and Construction Branch, IT&C

Companies operating in the broad field of manufacturing in Canada have been categorized under three main headings - Shipboard, Shipside and Miscellaneous. Several companies are primarily construction organizations - they are not hardware producers. They are included as having both erection and installation capabilities.

The detailed analyses which follow have been compiled strictly in accordance with information supplied by the companies. We do not accept responsibility for inaccurate claims to any specific capability.

PORT AND HARBOUR DEVELOPMENT

Manufacture - Erection - Construction

	Shipboard Equipment								Shipside Equipment												Miscellaneous Requirements																										
	CONVEYORS	CRANES, DERRICKS, WINCHES	ELEVATORS	HOSE SYSTEMS	HOORING EQPT	PUMPING & SUCTION EQPT	RAMS	SELF UNLOADERS	AERIAL ROPEWAYS	BRIDGES	CLAMHELL BUCKETS	CONTAINERS	CONVEYORS & STACKERS	FENDERS	GRAIN GALLERIES	HOSE TOWERS	MARINE LEGS	PALLETS	PUMPING & SUCTION EQPT	RAMS	SUNSHINE PIPELINES	TRAVELLING LOADERS/UNLOADERS	BARGES, PATROL BOATS, TUGS	BIKANWATERS	CATWALKS	CHANNEL MARKERS	DOLPHINS & MOORINGS	DECKING & EQPT	FERRY, FIRE, SUPPLY BOATS	GRAIN ELEVATORS	BAY AIDS - FIXED	BAY AIDS - FLOATING	OIL STILLAGE EQPT	PASSENGER HANDLING EQPT	PILE DRIVING & EQPT	RAIL CAR BUFFERS	SILOS, BINS, TANKS	WAREHOUSES & SHEDS	PIERS, BERTHS								
A.L.M. Steel Limited	X					X		X		X	X						X					X															X										
Acadian Gas Engines Limited		X																																													
Airchime Manufacturing Company Limited																																													X		
Alexander Metal Products (1965) Ltd.																																												X			
Algoma Steel Corp. Ltd.																	X																														
Allied Shipbuilders Ltd.																							X							X																	
Aluminum Welding Co. Ltd.																																														X	
Amalgamated Metal Industries Ltd.																																														X	
Atlas Construction Co. Ltd.					X								X	X							X	X		X		X	X		X								X	X	X	X	X						
Avalon Construction Ltd.								X			X											X		X																					X		
B.C. Gearworks Ltd.	X																																														
Barnett-McQueen Co. Ltd.								X	X		X	X	X	X	X	X	X	X	X	X	X	X		X	X		X											X	X	X	X	X					
Beaver Marine Ltd.																														X																X	
Bel-Aire Shipyard Ltd.																							X							X																	
Bennett Pollution Controls Ltd.																																															X
Benson Bros. Shipbuilding Co. (1960) Ltd.																							X																								
Birmingham Construction Ltd.																						X														X									X		
Black & MacDonald												X			X			X				X								X											X						
Brayshaw's Steel Limited								X	X															X																		X	X				
Bridge & Tank Co. of Canada Ltd.								X		X					X	X							X														X	X	X								
Breton Industrial & Marine Limited																							X																								
Brittain Steel Limited	X	X				X	X	X	X		X	X	X		X							X		X	X				X						X				X	X	X						
Burrard Dry Dock Company Limited																							X							X																	
Burrard Iron Works, Limited	X				X																																										
Byrne Construction																X				X	X			X	X	X	X	X																	X		
GTS of Canada Limited																																														X	

PORT AND HARBOUR DEVELOPMENT

Manufacture - Erection - Construction

Shipboard Equipment

Shipside Equipment

Miscellaneous Requirements

Company	Shipboard Equipment								Shipside Equipment								Miscellaneous Requirements																										
	CONVEYORS	CRANES, DERRICKS, WINCHES	ELEVATORS	HOSE SYSTEMS	MOORING EQPT	PUMPING & SUCTION EQPT	RAMPS	SELF UNLOADERS	AERIAL ROPEWAYS	BRIDGES	CLAMHELL BUCKETS	CONTAINERS	CONVEYORS & STACKERS	FENDERS	GRAIN GALLERIES	HOSE TOWERS	MARINE LEGS	PALLETS	PUMPING & SUCTION EQPT	RAMPS	SUBMARINE PIPELINES	TRAVELLING LOANERS/UNLOADERS	BARGES, PATROL BOATS, TUGS	BREAKWATERS	CATWALKS	CHANNEL MARKERS	DOLPHINS & MOORINGS	DREDGING & EQPT	FERRY, FIRE, SUPPLY BOATS	GRAIN ELEVATORS	NAV AIDS - FIXED	NAV AIDS - FLOATING	OIL SPILLAGE EQPT	PASSENGER HANDLING EQPT	PILE DRIVING & EQPT	RAIL CAR BUNDERS	SILOS, PINS, TANKS	WAREHOUSES & SHEDS	WHARVES, PIERS, BERTHS				
Canada Crate Co. Ltd.																	X																										
Canada Wire and Cable Limited																																					X						
Canadian Dredge & Dock Co.																					X		X	X				X	X														
Canadian Dynamics Ltd.																																	X										
Canadian General Electric Company Limited																																X											
Canadian Marconi Company																																					X						
Canadian Material Handling Systems																																				X							
Canron Limited		X							X		X												X										X										
Central Bridge Company		X					X		X		X	X	X		X					X																	X	X	X				
Chassé Inc.																	X																										
Commonwealth Construction Co. Ltd.												X	X	X	X	X					X	X	X	X	X	X	X	X	X	X						X	Y	X	X		X		
Collingwood Shipyards																													X														
Com Dev Marine																																X	X										
Comstock International Limited	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
Crouse Hinds Canada Limited																																				X	X						
Davie Shipbuilding Limited																								X					X														
Deutz Diesel (Canada) Ltd.																																		X									
Dillingham Corporation of Canada								X		X						X	X	X			X	X	X		X	X	X	X	X	X							X	X	Y				
Dominion Bridge Company Limited	X							X		X	X	X	X		X					X																	X	X	X				
Stuart M. Douglas Ltd.																																						X					
F. X. Drolet Inc.																																						X					
Drummond Welding & Steel Works Ltd.																																						X					
Eastern Steel Products Limited																																						X					
Fairview Industrial Engineering (1968) Ltd.																																						X					
Ferguson Industries Limited																							X						X					X									
Ferro Metals Ltd.																								X						X							X						

PORT AND HARBOUR DEVELOPMENT

Manufacture - Erection - Construction

	Shipboard Equipment							Shipside Equipment							Miscellaneous Requirements																																	
	CONVEYORS	CRANES, DERRICKS, WINCHES	ELEVATORS	HOSE SYSTEMS	MOORING EQPT	PUMPING & SUCTION EQPT	RAMPS	SELF UNLOADERS	AERIAL ROPEWAYS	BRIDGES	GLANSHELL BUCKETS	CONTAINERS	CONVEYORS & STACKERS	FENDERS	GRAIN GALLERIES	HOSE TOWELS	MARINE LEGS	PALLETS	PUMPING & SUCTION EQPT	RAMPS	SUBMARINE PIPELINES	TRAVELLING LOADERS/UNLOADERS	BARGES, PATROL BOATS, TUGS	BREAKWATERS	CATHALAS	CHANNEL MARKERS	DOLPHINS & MOORINGS	DREDGING & EQPT	FERRY, FIRE, SUPPLY BOATS	CHAIN ELEVATORS	NAV AIDS - SUPPLY BOATS	NAV AIDS - FIXED	OIL SPILLAGE - FLOATING	PASSENGER EQPT	FILE DRIVING & EQPT	RAIL CAR DUMPERS	MAIL CAR DUMPERS	SILOS, BINS, TANKS	WAREHOUSES & SHEDS	PIERS, BERTHS								
J. G. Fitzpatrick Construction								X					X							X		X	X						X												X	X	X					
Formex Ltd.																																																
Frankel Structural Steel Limited	X	X					X	X	X	X	X	X	X	X	X	X	X	X	X	X																												
Franki Canada Limited								X		X	X	X	X	X	X	X	X	X	X	X							X												X	X								
Georgetown Shipyards Inc.																							X										X															
Gould Manufacturing of Canada Ltd.																																		X														
Great West Steel Industries Ltd.								X		X	X	X	X	X	X	X	X	X	X	X				X	X	X	X														X							
Greenlees Piledriving Co. Ltd.																							X	X			X	X							X										X			
Hawboldt Industries Limited		X																																														
Heede International Limited		X	X									X			X		X		X	X																			X									
John T. Hepburn Limited	X	X	X		X																																											
Horton Steel Works Limited																																																
Ideal Electric Welding Co. Ltd.																																	X															
Industrial Marine Products Ltd.																																	X															
International Hydraulics		X																																														
Joy Manufacturing Co. (Canada) Ltd.		X																																														
Lachute Lumber & Millwork Limited																	X																															
Samuel Lampert & Co. Ltd.																																																
Laurentian Wood Inc.																	X																															
Le Chantier Naval Ltée.																						X																										
Les Constructions du St. Laurent Ltée.																							X	X		X		X	X							X	X								X			
Ben Livingston & Sons Ltd.																																																
Lord & Cie Limitée								X		X	X	X	X	X	X	X	X	X	X	X									X														X	X				
Lundrigans Limited																																																
Lunenburg Foundry & Engineering Limited		X																																														
Mackenzie Barge & Marine																						X																										

PORT AND HARBOUR DEVELOPMENT

Manufacture - Erection - Construction

	Shipboard Equipment													Shipside Equipment													Miscellaneous Requirements																																
	CONVEYORS	CRANES, DERRICKS, WINCHES	ELEVATORS	HOSE SYSTEMS	MOORING EQPT	PUMPING & SUCTION EQPT	RAMPS	SELF UNLOADERS	AERIAL ROPEWAYS	BRIDGES	CLAMHELL BUCKETS	CONTAINERS	CONVEYORS & STACKERS	FENDERS	GRAIN GALLERIES	HOSE TOWERS	MARINE LEGS	PALLETS	PUMPING & SUCTION EQPT	RAMPS	SUBMARINE PIPELINES	TRAVELLING LOADERS/UNLOADERS	BARGES, PATROL BOATS, TUGS	BREAKWATERS	CATWALKS	CHANNEL MARKERS	DOLPHINS & MOORINGS	DREDGING & EQPT	FERRY, FIRE, SUPPLY BOATS	GRAIN ELEVATORS	NAV AIDS - FIXED	NAV AIDS - FLOATING	OIL SPILLAGE EQPT	PASSENGER HANDLING EQPT	PILE DRIVING & EQPT	RAIL CAR DUMPERS	SILOS, BINS, TANKS	WAREHOUSES & SHEDS	QUARVES, PIERS, BERTHS																				
John Manly Ltd.																								X																																			
Marentette Bros. Limited	X	X	X		X	X	X		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X												
Marine Industries Limited																								X																																			
Maritime Industries Limited	X																																																										
Maritime Steel and Foundries Limited	X			X		X	X		X				X	X		X	X		X	X		X	X	X	X	X		X						X		X	X	X	X	X	X	X	X	X	X	X	X												
Marystown Shipyard Limited																							X						X																														
Mathews Conveyer Company, Ltd.	X												X																														X																
Matsumoto Shipyards Ltd.																							X																																				
McInnis Equipment Ltd.																																												X															
McNamara Marine																								X				X																							X								
John Misener Marine Equipment Limited																							X																																				
Modern Construction Limited																								X																																			
Nelson Wood Products Limited																	X																																										
Northern Construction Company										X													X																										X	X									
O&K Orenstein & Koppel Canada Ltd.	X	X					X						X			X							X																																				
Ocean Steel & Construction Ltd.									X			X	X	X	X	X										X	X																					X	X										
Oil Mop Inc.																																																X											
Pengo Hydra-Pull of Canada	X																																																										
Pentagon Construction (1969) Ltd								X	X			X		X	X	X								X						X																X	X	X											
Peter Kiewit Sons Company of Canada Ltd.																								X					X		X							X						X	X	X													
Phillips Cable Limited																																															X												
Pitts Engineering Construction Limited																																																											
Pollution Control Systems (International) Limited																																																											
Port Weller Dry Docks Limited																							X								X																												
The J. P. Porter Company Limited																							X																																				
Québec Engineering Limited																								X				X	X																														

PORT AND HARBOUR DEVELOPMENT

Manufacture - Erection - Construction

Shipboard Equipment

Shipside Equipment

Miscellaneous Requirements

	CONVEYORS	CRANES, BERRICKS, WINCHES	ELEVATORS	HOSE SYSTEMS	HOORING EQPT	PUMPING & SUCTION EQPT	PUMPS	SELF UNLOADERS																																	
									Shipboard Equipment												Shipside Equipment										Miscellaneous Requirements										
									AERIAL RIGGINGS	BRIDGES	CLAM-SHELL DICHLATS	CORRYWAYS	CORVEYORS & STACKERS	FRAMES	GRAIN GALLERIES	HOSE TOWERS	HULLING LEGS	PALLETS	PUMPING & SUCTION EQPT	PUMPS	SUBMERSIVE PIPELINES	TRAVELLING LOADERS/STACKERS	BARGES, PATROL BOATS, TUGS	BOATWAYS	CATWALKS	CHIMNEL MARKERS	DOLPHINS & MOORINGS	DRAGGING & HOORINGS	FERRY, FINE, SUPPLY BOATS	GRAIN ELEVATORS	MAY AIDS - FIXED	MAY AIDS - FLOATING	OIL SPILLAGE EQPT	PASSENGER HANDLING EQPT	TILE DRIVING & EQPT	RAIL CAR MOUNTERS	SILOS, BINS, TANKS	WAREHOUSES & SHEDS	WHARVES, PILES, BENTHS		
Wallace & Tiernan Division, Penwalt of Canada Limited																																									
Jervis B. Webb																																									
Western Caissons Limited						X				X	X	X			X	X	X	X		X	X	X		X	X		X	X				X						X			
Yarrows Limited																						X							X												
York Steel Construction Ltd.										X	X	X				X			X																				X		
Zenith Steel Fabricators Ltd.	X					X			X	X	X	X						X	X	X	X	X	X					X	X						X	X	X	X	X		

MANUFACTURE - ERECTION - CONSTRUCTION

Overseas Activity

<u>COMPANY</u>	<u>COUNTRY</u>	<u>DETAIL</u>
Bridge & Tank Company of Canada Ltd.	Burma	Bridge construction
	Jamaica	Dogleg girder bridges for marine works
	U.S.A.	Special erection trusses for warehousing
Brittain Steel Limited	Bahamas	Shiploader for handling aragonite
	Saudi Arabia	Bagging system for grain bulk handling
	Yemen Arab Republic	Bulk handling system for salt; shiploader, reclaimer, stackers, conveyor and miscellaneous steel construction work
Canron Limited	Kenya	Portal luffing cranes of varying capacities
	Tanzania	Ditto
Comstock International Ltd.	Bahrain	Concrete wharf rehabilitation
	Jamaica	Installation of bulk materials handling equipment
	New Zealand	Ditto

COMPANYCOUNTRYDETAIL

Dillingham Corporation
Canada Ltd.

Bahamas

Aragonite bulk loading facilities

El Salvador

Harbour dredging and dock extension

Panama

Container terminal construction

Frankel Structural Steel
Ltd.

Poland

Fabricated structural steelwork

McNamara Marine

Jamaica

Marine dock and ore storage building

Puerto Rico

Sheet steel pile wall and concrete cope wall for
harbour improvement project

Trinidad

Cathodic protection to an existing dock

Virgin Islands

Hydraulic dredging and bulkhead work

Québec Engineering Ltd.

El Salvador

Breakwater and wharf

India

Advisory services for caisson manufacture and installation

Sceptre Dredging Ltd.

Mexico

Dredging operations and equipment

Stephens-Adams (Canada)
Ltd.

Brazil

Automated bulk ore cargo handling systems

Iran

Automated crane unloading systems

COMPANYCOUNTRYDETAIL

Stephens-Adamson (Canada)
Ltd. (cont'd)

Jamaica

Conveyor system and travelling shiploader

Mauretania

Automated iron ore stacking and loading systems

Surrey Ironworks Ltd.

Trinidad

Grain handling and unloading facilities

Western Caissons Ltd.

Yemen Arab Republic

Construction of wharf for Yemen Salt Mines

PORT and HARBOUR DEVELOPMENTManufacture - Erection - ConstructionBRITISH COLUMBIA

A.I.M. Steel Limited	Vancouver
Airchime Manufacturing Company Limited	North Burnaby
Allied Shipbuilders Ltd.	Vancouver
B.C. Gearworks Ltd.	Delta
Bel-Aire Shipyard Ltd.	Vancouver
Bennett Pollution Controls Ltd.	Vancouver
Benson Bros. Shipbuilding Co. (1960) Ltd.	Vancouver
Brittain Steel Limited	New Westminster
Burrard Dry Dock Co. Limited	Vancouver
Burrard Iron Works, Limited	Vancouver
Canadian Dynamics Ltd.	Vancouver
Canron Limited - Western Bridge Division	Vancouver
Commonwealth Construction Co. Ltd.	Vancouver
D.J. Byrne Construction	Vancouver
Dillingham Corporation of Canada	Vancouver
Great West Steel Industries Ltd.	Vancouver
Greenlees Piledriving Co. Ltd.	Vancouver
Heede International Limited	Port Moody
Peter Kiewit Sons Company of Canada Ltd.	Vancouver
MacKenzie Barge & Marine	Vancouver
John Manly Limited	Vancouver
Maritime Industries Limited	Vancouver
Matsumoto Shipyards Ltd.	Vancouver
Northern Construction Company	Vancouver
RHB Cybernetics (1970) Ltd.	Victoria
Sceptre Dredging Ltd.	Vancouver
Surrey Ironworks Limited	Surrey
Vancouver Shipyards Co. Ltd.	Vancouver
Victoria Machinery Depot Co. Limited	Victoria

BRITISH COLUMBIA (cont'd)

Yarrows, Limited

Victoria

Zenith Steel Fabricators Ltd.

Richmond

NEW BRUNSWICK

Le Chantier Naval Ltée

Caraquet

Modern Construction Limited

Moncton

Ocean Steel & Construction Ltd.

Saint John

Saint John Shipbuilding & Dry Dock Co., Ltd.

Saint John

NEWFOUNDLAND

Avalon Construction Ltd.

St. John's

Lundrigans Limited

Cornerbrook

Marystown Shipyard Limited

Marystown

NOVA SCOTIA

Acadia Gas Engines Limited

Bridgewater

Breton Industrial & Marine Limited

Port Hawkesbury

Fairview Industrial Engineering (1968) Ltd.

Armdale

Ferguson Industries Limited

Pictou

Hawboldt Industries Ltd.

Chester

Industrial Marine Products Ltd.

Dartmouth

Lunenburg Foundry & Engineering Limited

Lunenburg

Maritime Steel and Foundries Limited

New Glasgow

Steel & Engine Products Ltd.

Liverpool

ONTARIO

Alexander Metal Products (1965) Ltd.

Ottawa

Algoma Steel Corporation, Limited

Sault Ste. Marie

Amalgamated Metal Industries Ltd.

Mississauga

Barnett-McQueen Co. Ltd.

Thunder Bay

Birmingham Construction Ltd.

Hamilton

Black & McDonald Ltd.

Toronto

Brayshaws Steel Limited

Thunder Bay

Bridge & Tank Company of Canada Ltd.

Hamilton

CTS of Canada Limited

Streetsville

Canada Wire and Cable Limited

Toronto

Canadian Dredge & Dock Co.

Toronto

Canadian General Electric Company Limited

Peterborough

ONTARIO (cont'd)

Canadian Material Handling Systems	Burlington
Central Bridge Company	Toronto
Collingwood Shipyards	Collingwood
Com Dev Marine	Bells Corners
Comstock International Ltd.	Toronto
Crouse Hinds Canada Limited	Scarborough
Stuart M. Douglas Ltd.	Smiths Falls
Eastern Steel Products Limited	Cambridge
Frankel Structural Steel Limited	Toronto
Gould Manufacturing of Canada, Ltd.	Fort Erie
John T. Hepburn Limited	Toronto
Horton Steel Works Limited	Toronto
International Hydraulics	Richmond Hill
Samuel Lampert & Co. Ltd.	Ottawa
Marentette Bros. Limited	Windsor
Mathews Conveyor Company, Ltd.	Port Hope
McInnis Equipment Ltd.	Windsor
McNamara Marine	Whitby
John Misener Marine Equipment Limited	Port Colborne
Nelson Wood Products Limited	Wheatley
O&K Orenstein & Koppel Canada Limited	Dundas
Oil Mop Inc.	Toronto
Pengo Hydra-Pull of Canada	Woodstock
Phillips Cables Limited	Brockville
Pitts Engineering Construction Limited	Toronto
Pollution Control Systems (International) Limited	Thornhill
Port Weller Dry Docks Limited	St. Catharines
Rapistan Canada Limited	Toronto
Ray Welding Company	Brampton
Russel Brothers Limited	Owen Sound
Sawyer-Stoll Limber Co.	Tweed
Steadman Containers	Brampton
Stephens-Adamson (Canada) Limited	Belleville
Stone Platt Crawley Ltd.	Markham
The Timberland Ellicott Limited	Woodstock

ONTARIO (cont'd)

Union Carbide Canada Limited	Woodstock
Wallace & Tiernan Division, Pennwalt of Cda. Ltd.	Scarborough
Jervis B. Webb	Toronto
Western Caissons Limited	Maple
York Steel Construction Ltd.	Toronto

PRINCE EDWARD ISLAND

Georgetown Shipyards Inc.	Georgetown
Ben Livingston & Sons Ltd.	Charlottetown
Bruce Stewart Limited	Charlottetown

QUEBEC

Aluminum Welding Co. Ltd.	Montréal
Atlas Construction Co. Limited	Ville St. Pierre
Beaver Construction Group (Beaver Marine Ltd.)	Montréal
Cambrian Construction Limited	Montréal
Canada Crate Co. Limited	Saint-Jean
Canadian Marconi Company	Montréal
Cannon Limited	Lachine
Chassé Inc.	Sainte-Marie de Beauce
Davie Shipbuilding Limited	Lauzon
Desourdy Construction Ltée.	St. Hubert
Deutz Diesel (Canada) Ltd.	St. Laurent
Dominion Bridge Company, Limited	Lachine
F.X. Drolet Inc.	Québec
Drummong Welding & Steel Works Ltd.	Longueuil
Ferro Metal Ltd.	Longueuil
J.G. Fitzpatrick Construction	Montréal
Formex Ltd.	Longueuil
Franki Canada Limited	Montréal
Ideal Electric Welding Co. Ltd.	Montréal
Joy Manufacturing Company (Canada) Ltd.	Cambridge
Lachute Lumber & Millwork Limited	Lachute
Laurentien Wood Inc.	Montréal
Les Construction du St. Laurent Ltée.	Villeneuve
Lord & Cie Limitée	Montréal

QUEBEC (cont'd)

Marine Industries, Limited	Sorel
Pentagon Construction (1969) Ltd.	Montréal
J.P. Porter Co. Ltd.	Montréal
Québec Engineering Ltd.	Montréal
Seaway Plate & Structural Steel Limited	Sorel
Noel Roy	Sorel
Simard Beaudry Inc.	Montréal
Standard Structural Steel Ltd.	Montréal
Tracey Plate Shop Inc.	Sorel
United Towing & Salvage Co. Ltd.	Sorel
Vapor Canada Limited	Montréal
Verreault Navigation Inc.	Les Méchins
Vulcan Industries Ltd.	Pointe aux Trembles

PORT AND HARBOUR MOBILE EQUIPMENT

This sub-section provides information on Canadian companies which design, develop and manufacture mobile equipment for a wide variety of construction tasks.

The listing includes cranes, asphalt pavers, off-highway trucks and graders etc. - all of which may be required in port and harbour development or improvement.

In all some 90 companies are included in the listing which was reviewed and compiled with the assistance of the Machinery Branch.

PORT AND HARBOUR DEVELOPMENT

Mobile Equipment

	Air Comp. Portable	All-term. Veh. Track.	Asphalt Paving M/cs.	Asphalt Kettles	Asphalt Plants	Blades, Dozer, Grader	Buckets Misc. Special	Concrete Buckets	Concrete Pumps & M/cs.	Crushing Truck Mixers	Crushing Plants Portable	Cranes Power Shovel	Cranes Container	Cranes Shipload/Unload	Cranes Floating	Cranes Mobile	Cranes Truck Mounted	Carriers Climbing	Ditchers for Upperworks	Drills	Excavators & Trenchers	Graders Motor	Loaders Backhoes	Loaders Frontend	Piling Breaker	Piledrivers	Rollers & Compactors	Spec. Container M/cs.	Traffic Line Markers	Trailers Rot./Side Dump	Trucks Off Hlshway	Trucks Pflc	
Aerometals Ltd.						X																											
Alta. Tractor Parts Ltd.			X																														
Allatt Limited	X																																
Allis Chalmers Rumely Ltd.																						X										X	
American Hoist of Cda. Ltd.																X								X									
Atlas Hoist & Body Inc.																												X					
ATM Industries Ltd.																																X	
Barber-Greene Cda. Ltd.	X	X						X																									
Becker Drills Limited																		X															
Bedard Trailer & Body Ltd.																											X						
Berminghammer Corp.																							X										
Blue Giant Equip. of Cda. Ltd.																																X	
Bomag (Canada) Limited																									X								
Bombardier Ltd. (Ind. Div.)	X																																
Brunner & Lay (Canada) Ltd.																						X											
Bucyrus Blades of Cda. Ltd.			X																														
Burrard Dry Dock Co.												X																					
Cdn. Ingersoll-Rand Co. Ltd.																		X				X		X									
Cdn. Lift & Loader Ltd.																																X	
Canron									X																								
Caterpillar of Cda. Ltd.																					X	X										X	
Care Equip. Mfg. Co. Ltd.																																X	
Clark Equip. of Cda.																						X										X	

PORT AND HARBOUR DEVELOPMENT

Mobile Equipment

	Air Comp. Portable	All-term. Veh. Track.	Asphalt Paving M/c.	Asphalt Kettles	Asphalt Plants	Blades, Dozer, Grader	Buckets Misc. Grader	Concrete Misc. Special	Concrete Buckets	Concrete Pumps & M/cs.	Crushing Truck Mixers	Cranes Plants Portable	Cranes Power Shovel	Cranes Container	Cranes Shipload/Unload	Cranes Floating	Cranes Mobile	Cranes Truck Mounted	Carriers for Climbing	Ditchers for Upperworks	Drills	Excavators - Backhoes	Graders Motor	Loaders Motor	Paving Frontend	Piledrivers	Rollers & Compactors	Spec. Container M/cs.	Traffic Container M/cs.	Trailers Bot./Side Dump	Trailers Bot./Side Dump	Trucks Off Highway	Trucks Fklt.				
Wais Machine Shop			X																																		
Columbia Trailer Co. Ltd.																																					
Consolidated Dynamics Ltd.																		X																			
Crane Carrier Cda. Ltd.																		X																			
Shawmut Steel Limited														X																							
Max Machinery Corp.																					X																
Wesco Limited				X																																	
Flextrac Nodwell Ltd.	X																																				
M.C. of Canada Ltd.										X		X										X															
Orano Limited									X																												
Coremost Int'l. Ind. Ltd.	X																																				
J.S. Fraser Co. Ltd.																																					
Reuhauf Trailer Co. of Cda. Ltd.																																					
Gardner-Denver Co. (Cda.) Ltd.	X																			X				X													
General Crane Ind. Ltd.															X																						
General Motors of Cda. Ltd.																							X														
Arricana Metal Inc.				X																																	
Walker Siddeley (Halifax)														X																							
Seede Int'l. Limited											X					X																					
Switt-Robins (Cda.) Ltd.									X																												
Highway Trailers of Cda. Ltd.																																					
Hy Hoe Corporation																					X																

PORT AND HARBOUR DEVELOPMENT

Mobile Equipment

	Air Comp-Portable	All-term-Veh.Track.	Asphalt Paving M/Cs.	Asphalt Kettles	Blades, Dozer, Grader	Buckets Misc. Grader	Concrete Buckets	Concrete Pumps & M/Cs.	Crushing Truck Mixers	Crushing Plants Portable	Cranes Power Shovel	Cranes Container	Cranes Shipload/Unload	Cranes Floating	Cranes Mobile	Cranes Truck Mounted	Carriers for Upperworks	Ditchers & Trenchers	Drills	Excavators-Backhoes	Graders Motor	Loaders Frontend	Paving Breaker	Piledrivers	Rollers & Compactors	Spec Container M/Cs.	Traffic Line Markers	Trailers Bot./Side Dump	Trucks Low Bed	Trucks Off Highway	Trucks Full
Hyster Canada Limited																														X	
John T. Hepburn Limited										X																					
International Harvester Co.																					X										
Jacobs Bros.Machine Ltd.												X	X																		
Jaegar Machine Co. of Cda. Ltd.	X					X	X																								
Joy Mfg. Co. (Cda.) Ltd.	X																X				X										
King Seagrave Limited			X										X																		
Koehring-Waterous Ltd.																			X												
Lennon Company Limited																										X					
Letco Limited			X																												
London Concrete Machinery							X																								
Mack Trucks Cda. Ltd.							X																								
Maple Leaf Metal Prod. Ltd.		X	X																												
Marathon Equipment Ltd.		X																													
McCormack Blades Ltd.			X																												
Milmar Magnesium Equip.Co.					X																										
Mobile Mats.Handling Equip.																															X
Orenstein & Koppel											X						X														
Otis Elevator Co. Ltd.																															X
Pacific Truck & Trailer Ltd.																										X					
Frederick Parker (Cda.) Ltd.								X															X								
Patrick Equipment Ltd.																															X

MOBILE EQUIPMENT

Overseas Activity

COMPANY

COUNTRY

DETAIL

Allis-Chalmers, Rumely,
Ltd.

Brazil

Miscellaneous forklift trucks for cargo handling

East Africa

France

Grenada

South Africa

Taiwan

Turkey

Venezuela

West Indies

Blue Giant Equipment of
Canada Ltd.

Hong Kong

Pallet trucks, lift trucks and stackers

Ireland

Jamaica

South Africa

Trinidad

COMPANY

Clark Equipment of
Canada Ltd.

COUNTRY

Australia
Chile
Costa Rica
Denmark
Finland
Guatemala
Greece
Indonesia
Iran
Jamaica
Kenya
Korea
Malaysia
Mexico
New Guinea
New Zealand
Nigeria
Panama

DETAIL

Front-end loaders and construction equipment

COMPANYCOUNTRYDETAILClark Equipment of
Canada Ltd. (cont'd)Philippines
South Africa
Surinam
Tanzania
Thailand
Venezuela

Front-end loaders and construction equipment

FMC of Canada Ltd.

Africa
Belgium
India
Indonesia
Pakistan
Peru
Puerto Rico
Saudi Arabia
Singapore
Tanzania
West Indies

Cranes for construction and cargo handling

COMPANYCOUNTRYDETAIL

Hyster Canada Ltd.

Burma

Miscellaneous forklift trucks for cargo handling

Guiana

Ivory Coast

Jamaica

Kuala Lumpur

Malaysia

Nigeria

Peru

Singapore

Mobile Materials Handling
Equipment Ltd.

Australia

Pallet trucks and stackers

Italy

U.S.A.

Patrick Equipment Ltd.

Australia

Logloaders

Chile

Forklift trucks

COMPANYCOUNTRYDETAIL

Skagit Equipment Ltd.

Argentina

Mobile cranes and forklift trucks

Bangladesh

Brazil

Chile

China

Egypt

Mexico

Pakistan

Peru

Portugal

South Africa

Switzerland

Venezuela

Steadman Containers Ltd.

Australia

Container side-transfer systems and sidelifift machines

Brazil

Israel

Liberia

U.S.A.

COMPANY

Thomas Equipment Ltd.

COUNTRY

Algeria

Argentina

Cuba

South Africa

Venezuela

DETAIL

Front-end loaders

PORT and HARBOUR DEVELOPMENTMobile EquipmentALBERTA

Alberta Tractor Parts Limited	Edmonton
Becker Drills Limited	Calgary
Flextrac Nodwell Ltd.	Calgary
Foremost International Industries Ltd.	Calgary

BRITISH COLUMBIA

Burrard Dry Dock Company	Vancouver
Canron Limited	Vancouver
Columbia Trailer Co. Ltd.	Burnaby
Esco Limited	Port Coquitlam
Heede International Limited	Port Moody
Jacobs Bros. Machine Works Limited	Richmond
Pacific Truck and Trailer Ltd.	North Vancouver
Patrick Equipment Ltd.	North Burnaby
Skagit Equipment Ltd.	Langley
Weldco Ltd.	Vancouver
The Welding & Engineering Co.	Vancouver

MANITOBA

Spiroll Corporation	Winnipeg
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NEW BRUNSWICK

Craig's Machine Shop Limited	Hartland
Thomas Equipment Ltd.	Centreville

ONTARIO

Aerometals Limited	Toronto
Allatt Limited	Downsview
Allis-Chalmers, Rumely, Ltd.	Guelph
American Hoist of Canada Limited	Brampton
ATM Industries Limited	Malton
Barber-Greene Canada Ltd.	Milton
Birmingham Construction Ltd.	Hamilton
Blue Giant Equipment of Canada Ltd.	Brampton

ONTARIO (cont'd)

Bomag (Canada) Limited	Mississauga
Bucyrus Blades of Canada Ltd.	Bramalea
Care Equipment Manufacturing Co. Limited	Breslau
Caterpillar of Canada Ltd.	Mississauga
Clark Equipment of Canada	St. Thomas
Consolidated Dynamics Limited	Buttonville
Crane Carrier Canada Limited	Rexdale
Dahmer Steel Limited	Kitchener
The Dominion Road Machinery Company Limited	Goderick
FMC of Canada Ltd., Link-Belt Speeder Division	Woodstock
Frederick Parker (Canada) Limited	Scarborough
Freuhauf Trailer Company of Canada Limited	Mississauga
Gardner-Denver Company (Canada) Limited	Scarborough
General Crane Industries Ltd.	London
General Motors of Canada Limited	London
John T. Hepburn Limited	Toronto
Highway Trailers of Canada Limited	Mississauga
Hy-Hoe Corporation Ltd.	Arnprior
Hyster Canada Ltd.	Mississauga
International Harvester Company of Canada, Limited	Hamilton
Jaeger Machine Co. of Canada Ltd.	St. Thomas
Joy Manufacturing Company (Canada) Limited	Ottawa
King Seagrave Ltd.	Woodstock
Koehring-Waterous Ltd.	Brantford
Letco Limited	Preston
London Concrete Machinery Division	London
Mack Trucks Canada Limited	Toronto
Maple Leaf Metal Products Limited	Windsor
Marathon Equipment Ltd.	Weston
McCormack Blades Ltd.	Whitby
Milmar Magnesium Equipment Canada	Toronto
Mobile Materials Handling Equipment	Mississauga
O&K Orenstein & Kopped Canada Limited	Dundas
Otis Elevator Co. Ltd.	Hamilton

ONTARIO (cont'd)

Patterson Industries (Canada) Ltd.	Scarborough
Provincial Crane Division of Dominion Bridge	Niagara Falls
Raymond Industrial Equipment Limited	Brantford
Sellick Equipment Ltd.	Windsor
Smith Bros. Motor Bodies Ltd.	Markham
Steadman Containers Ltd.	Brampton
Stephens-Adamson (Canada) Limited	Belleville
Truck Engineering Ltd.	Woodstock
Unit Rig and Equipment Co. (Canada) Ltd.	Niagara Falls
Valley Blades Limited	Galt
Wabco Equipment of Canada	Paris
Zor Industries Limited	Woodstock

QUEBEC

Atlas Hoist and Body Incorporated	Montréal
Bedard Trailer and Body Limited	Montréal
Bombardier Ltd. (Industrial Division)	Valcourt
Brunner and Lay (Canada) Ltd.	Lachine
Canadian Ingersoll-Rand Company Limited	Montréal
Dux Machinery Corporation	Repentigny
Forano Limited	Plessisville
Harricana Metal Incorporated	Amos, Abitibi
Hewit-Robins (Canada) Limited	Montréal
Sicard Incorporated	Ste-Thérèse
Sorel Steel Foundries Limited	Montréal
Worthington Construction Equipment Ltd.	Montréal

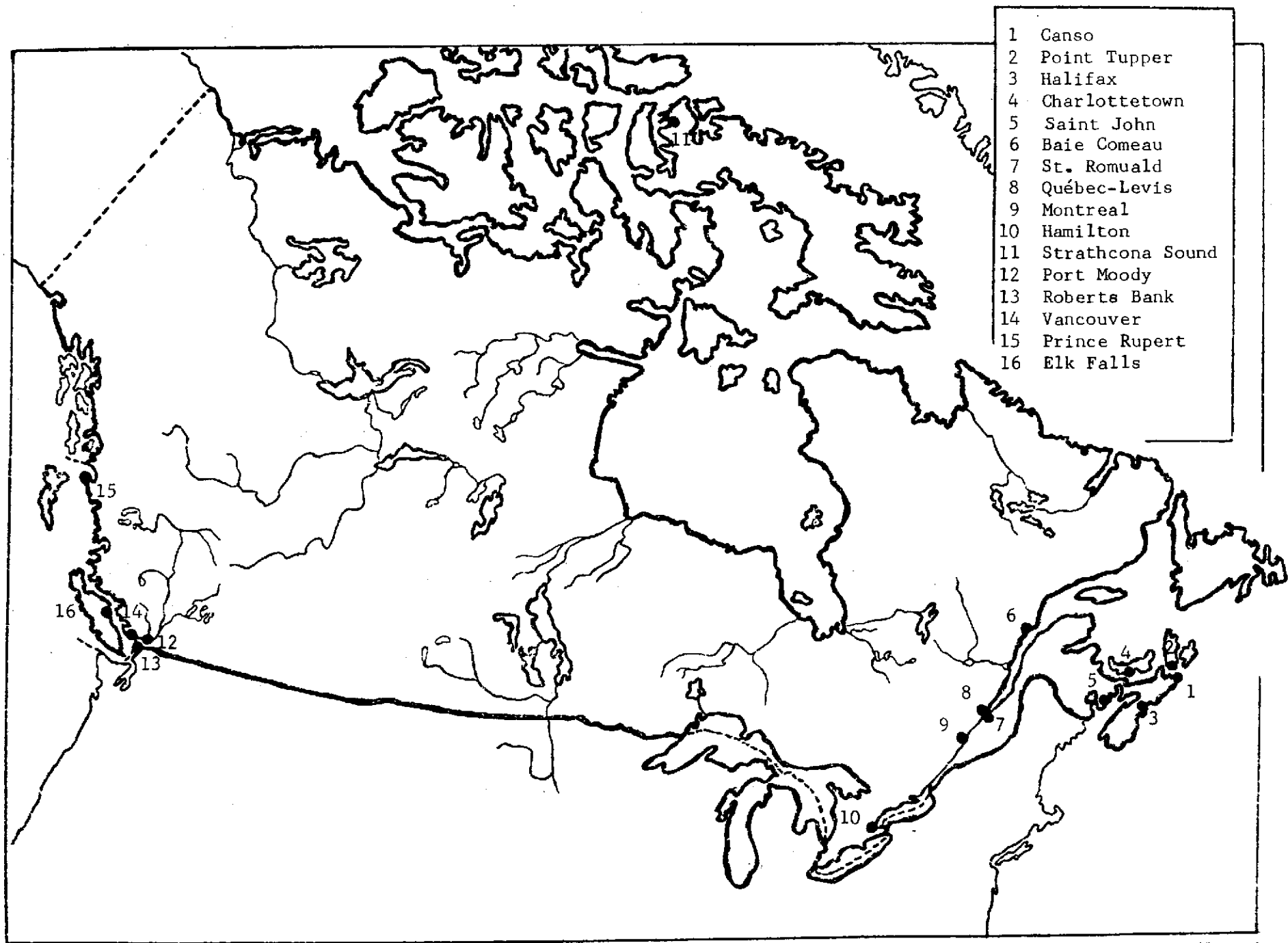
SASKATCHEWAN

Traffic Line Marking Equipment	Regina
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PORT, HARBOUR AND MARINE TERMINAL
PROJECTS IN CANADA

Examples of Canadian competence in engineering, construction and manufacture techniques are briefly described in the following pages.

The section also provides a tabulation of tonnages handled in 1974 by National Harbours Board, Harbour Commission and Public Harbour facilities.



CANADIAN PROJECTSPoint Tupper

At Point Tupper in Nova Scotia a wharf with the most advanced oil handling equipment has been installed. The installation includes eight loading arms, four of which are 16 inches in diameter and four 12 inches in diameter. This wharf, erected in 100 feet of water, is designed to berth tankers of 300,000 dwt. The loading and off-loading rate will be 100,000 bbl of oil per hour. The project involved 2,300 tons of steel, 4,600 cubic yards of concreting and some 300 thirty-inch (plus) diameter piles were installed; 130 of these piles are single anchor type. The Point Tupper complex ranks high among international marine terminal development.

Canso

This modern fish and fish meal processing plant, designed and completed over a period of four years, has an annual throughput of 60 million pounds of mixed ground fish on a single shift basis. The seafood products of the plant include a complete range of fresh and frozen products, also semi-prepared and individually quick-frozen convenience foods. The plant is designed to process waste product from the main fish processing plant, together with trash fish and other raw material. The refrigeration plant has a 500-ton capacity. It services a two million pound capacity cold storage at -20F. Specialized equipment was designed to permit high unloading rates with minimal product damage. Automatic batch weighing is carried out in a holding room to preserve fish at high quality while awaiting processing. One other notable feature is the specially-designed processing tables which permit the introduction of a small team incentive system.

Charlottetown

This project involved extensive sub-surface investigations; dredging, filling and piling operations were difficult and complex. The wharf consisted of a heavy reinforced concrete dock in an "L" shape separated by a 90-foot long steel tube and "H" piles. The tubes were 24 inches in diameter filled with reinforced concrete. The interior of the "L" formed by the deck of the wharf was filled with a granular fill material to form the interior and approach area of the wharf. The bottom of the harbour was overlaid with a thick stratum of black silty material. When the fill was placed special precautions were essential to ensure that displacement of the silt was properly controlled.

Baie Comeau

This project for the Ontario Paper Company included engineering and construction work for two heavy-duty wharves in the tidal reaches of the St. Lawrence. The technology demanded in engineering and construction work was exacting because of strong tidal implications. The first wharf provides a 700-foot berth with minimum draft of 26 feet for general cargo handling and the second a 650-foot berth with minimum draft of 24 feet for loading pulpwood logs. The wharf piling is 20-inch diameter steel pipe (70 feet maximum length) and 14-inch steel H-beam (180 feet maximum length). The decks are of reinforced concrete. Wharves are equipped with a 550-volt power outlet system and a mercury vapor floodlighting system.

Québec-Lévis

An engineering study was undertaken to improve the quays and wharves of the Québec-Lévis ferry. The ferry is subject to very heavy traffic and is an essential link between the two cities. This project was undertaken for the P.Q. Department of Transport; berthing conditions were improved and wharves reconstructed. Tidal interferences which are as high as 22 feet in the spring and ice conditions were analyzed and structural improvements designed to eliminate ice blockage at the ramps. The vertical surface of the quays and ramps are heated to prevent excessive ice formation.

Saint-Romauld

The oil refinery at St. Romauld on the St. Lawrence River, P.Q., has a scheduled production of 100,000 bpd and a crude oil storage capacity of 3,500,000 bbl. Crude oil is delivered by tankers up to 100,000 dwt and the refined product is shipped in vessels ranging from 2,500 dwt to 20,000 dwt. To install this wharf it was necessary to first undertake a feasibility study with a year-round operation in mind. Analyses indicated wind gusts up to 85 mph, waves of eight feet, water currents at four knots. Soil investigation was intensive. With the assistance of the Department of Transport, studies were made of the severe ice conditions. The project was designed and completed by a consortium of Canadian companies within a total elapsed time of 16 months. The installation incorporates advanced engineering design and construction features.

Montréal

Marine facilities were developed for Expo '67 for eventual use as part of the Port of Montréal. The pier provides a 3,000-foot wharf with a 20-foot draft. It was built of 26 concrete caissons within an earthfill cofferdam enclosing part of the site. Some caissons

were built on site, others floated into final position. Problems were encountered due to the nature of the bedrock which contained clay seams necessitating investigations by test pits and borings. The fill excavated from the St. Lawrence River was held by pile-supported concrete retaining walls 24 feet high and covering about 3,400 feet. Steel H-piles were used for most walls; concrete piles were used in areas where corrosive soil precluded use of unprotected steel. This project called for a high level of skills in marine engineering, soil investigation, pier design and subsequent installation and construction.

Hamilton

The Canada Centre for Inland Waters is located in Hamilton Harbour. Canadian consulting engineers carried out an analysis of environmental conditions which indicated sizeable wind-generated waves. Hydraulic model tests were undertaken and the structure designed for waves and ice forces peculiar to the site; it consists of alternate "A" and "H" frame pile bents at 10-foot centres with a reinforced concrete copewall from which precast concrete panels are hung and bolted to the piling. Flume tests were necessary and the sequence of construction was complex. It involved driving steel pipe and H-piles, handling precast concrete planks 10 inches thick and 10 feet by 22 feet weighing 15 tons. A spreader was used to bring the planks into final position and split bearing plates used to suspend the planks from the copewall. Each plank was secured to H-pile flanges with eight clamps. The engineering and construction concepts required to protect the mooring area from wave action and surge called for high and innovative skills.

Baffin Island

Baffin Island is 450 miles north of the Arctic circle and a marine terminal is being developed for shipping lead and zinc concentrates and for receiving general cargo necessary for year-round operation of the mine and community. This is a unique project in terms of Canadian marine construction and substantial capital cost savings were realized utilizing open-water techniques. The dock consists of three gravel-filled steel sheet pile cells with 45 feet of water at the berth at low tide. The cells are backed by a gravel-filled dock apron armoured with 2 1/2 ton rock against wave attack. The causeway connecting the shore with the right-of-way for the shipping conveyor and petroleum product pipelines. The concentrates will be trucked from the mill some 1 3/4 miles away and will be stockpiled at the marine terminal in a building 740 feet long and 150 feet clear span. The storage building can contain the full annual production of concentrates of the mill, namely 140,000 tons of zinc and 14,000 tons of lead. The shipping conveyors and shiploader are nominally rated at 1,800 tons per hour, and will be capable of loading bulk carriers of up to 50,000 dwt in size.

Roberts Bank

The bulk cargo export terminal at Roberts Bank international port in British Columbia was completely engineered and the total project managed by Canadian consultants. Terminal design was sufficiently detailed to permit Canadian fabricating shops to construct the machines and equipment; this involved several Canadian mechanical and electrical sub-contractors. The installation was built on land fill and a deep passage dredged to take 120,000 dwt bulk cargo vessels. Roberts Bank is located in a seismic zone and extensive soil studies were undertaken to ensure stability under shock conditions. A continuous rotary car dumper system was developed and the coal is stockpiled and reclaimed by a bucket mechanism. This highly-automated system incorporating dual quadrant coal loaders can handle 12 million tons per annum. An ice-breaker mechanism was incorporated in the coal handling facility to eliminate any serious obstruction to the continuity of the operation. This terminal installation is noteworthy for efficiency, ease of maintenance and fast vessel turn-around time.

Port Moody

The large, deep-sea terminal at Port Moody in British Columbia contains storage, loading and docking facilities for a wide variety of bulk materials including coal, sulphur, asphalt, wood chips and phosphate rock. Intensive studies were carried out to establish specific design and construction requirements to suit the wide variety of commodities to be handled. Docking and mooring dolphins were constructed from metal-coated steel piles equipped with concrete caps and butyl fenders. New travelling ship loaders were designed of sufficient height and reach to fill the holds of large modern boat tankers up to 100,000 dwt. The design permits the ship loader to rise and fall with the tide and in unison with the vessel being loaded. Pre-cast and pre-stressed concrete, structural-grade aluminum and special metal spray coatings were used to protect equipment and structure from corrosion by marine conditions and by materials handled. A 1,290-foot dock with two pontoon-supported travelling ship loaders can handle two vessels simultaneously at a combined loading rate of up to 5,000 long tons per hour. A fixed barge loader operates from an extension to the main dock. A system for receiving incoming phosphate rock from self-unloading, deep-sea ships was also installed.

Elk Falls

The total site at Elk Falls on Vancouver Island was planned and developed in scheduled stages. It covers approximately 100 acres. The harbour facilities include deep-sea docks and coastal-shipping docks to handle commodities such as fuel oil, chemicals and supplies.

More than 1,000,000 cubic yards of fill were dredged in site preparation. The terrain is particularly difficult, it is rock and caused severe difficulties in levelling the area. Tide variations of seven to 12 feet added to the complexity of the operations. The area includes warehousing facilities, storage tanks, yard storage accommodation and a water-sorting area for logs. The installations include road and railroad systems and car-marshalling areas. The consultant designed the complete utilities system for plant and facilities.

National Harbours Board

Several National Harbours Board (NHB) ports have been or are being extended and improved. Engineering design is primarily a Federal responsibility with private sector support as required.

Halifax

The Halterm container and roll-on-off terminal has 55 acres of paved storage space and berthing facilities for two vessels. Containers are handled by three modern gantry cranes and a fleet of straddle carriers. Halterm embodies modern design principles and is one of the most efficient installations of its type in North America.

Saint John

The new 42-acre Rodney terminal at Saint John will be capable of handling 2.25 million tons of container cargo annually. It will be serviced by two portainer cranes with provision for a third and will also include roll-on-off operations. The terminal design is advanced in its concepts and ranks as one of the larger North American terminals.

Québec

National Harbours Board is carrying out a major program of development in the Beaufort Flats area which covers some 2,500 acres. The project has involved massive dredging operations and thus far five concrete wharves have been constructed with preparatory dredging between depths of 40 and 50 feet removing more than 12 million cubic yards of sand. The main traffic is petroleum products, coal, zinc and copper.

At Wolfe's Cove west of Québec City a container terminal designed by CPR is in operation. Its throughput in 1974 was over 65,000 TEU's (20-foot equivalent units).

Montréal

Major improvements undertaken recently were two large wharves which relocated the container terminal, the Jacques Cartier terminal for roll-on-off vessels and improved grain handling facilities. In all, there are some 134 berths, 47 of which have sheds and handle general cargo and 35 open berths for lumber, steel and automobiles. Montréal has 25 berths for petroleum bulk products, 10 for loading grain, eight for mineral ores and similar and three container berths. The port now handles every type of cargo. The full-scale container terminals are equipped with gantry cranes and all necessary equipment for year-round handling of units. The first roll-on-off container line service was introduced in 1972. Four modern grain elevators with a total capacity of 560,000 metric tons are capable of unloading 8,000 metric tons per hour. The maximum continuous loading rate for one vessel is 4,400 metric tons per hour.

Vancouver

Seabord terminals were completed in 1971 and consist of three-berth wharf fronting 55 acres of reclaimed land. It is primarily a forest products terminal constructed with the objective of consolidating a good portion of lumber and plywood exports from Vancouver.

The new terminal at Vanterm on the south shore covers some 95 acres including two 900-foot berths with a minimum draft of 50 feet. A slip berth of 750 feet provides roll-on and roll-off and container handling accommodation.

Prince Rupert

The Fairview terminal at Prince Rupert is part of a combined Federal and Provincial program of transportation and resource development. It will have two 1,400-foot berths backed up by 40 acres of land and the minimum low-water depth of 45 feet will accommodate ocean-going traffic with access by road and rail. Site preparation was a complex operation which necessitated excavating a hill behind the terminal, re-use of old suitable material to create new land areas and construction of a long access road from the main highway. When completed the terminal will handle concentrates, fish products, automobiles, general cargo and containers, forest products, tall oil and pipeline steel. Advanced techniques in wharf construction includes 12 reinforced concrete cribs 114 feet by 50 feet by 67 feet high and weighing 6,000 tons each. These cribs will be aligned and the area behind filled, topped and services installed.

NATIONAL HARBOURS BOARD

Port Statistics - 1974

<u>Port</u>	<u>Cargo - Million Tons</u>		<u>Total</u>	<u>Vessel Arrivals</u>	<u>GRT - Million Tons</u>
	(domestic)	(foreign)			
Halifax	3.424	10.451	13.875	2,250	16.725
Saint John	2.910	2.990	5.900	1,840	14.039
Sept Iles	4.601	25.939	30.540	1,391	18.873
Québec	5.061	8.869	13.930	1,740	11.864
Montréal	11.262	12.580	23.842	3,931	31.918
Vancouver	7.840	34.060	41.900	16,749	58.665
*Other Ports	<u>5.255</u>	<u>9.233</u>	<u>14.488</u>	<u>6,690</u>	<u>16.844</u>
Total	<u>40.353</u>	<u>104.122</u>	<u>144.475</u>	<u>34,591</u>	<u>168.928</u>

*St. John's - Belledune - Chicoutimi - Baie des Ha! Ha! - Trois Rivières - Prescott - Port Colborne - Churchill - Prince Rupert

TOP TEN FACILITIES IN CANADACargo Tonnages - 1974

<u>Facility</u>	<u>Authority</u>	<u>Million Tons</u>
Vancouver	National Harbours Board	41.900
Sept Isles	National Harbours Board	30.540
Montréal	National Harbours Board	23.842
Lakehead	Harbour Commissions	18.439
Québec	National Harbours Board	13.930
Halifax	National Harbours Board	13.875
Hamilton	Harbour Commissions	11.810
North Fraser	Harbour Commissions	10.457
Sarnia	Public Harbours	8.552
Port Hawkesbury	Public Harbours	8.081
	Total	<u>181.426</u>
	Total all of Canada	302.340
	Per cent of Canadian total is <u>60%</u>	

HARBOUR COMMISSIONS - FACILITIES IN CANADACargo Tonnages - 1974

<u>Facility</u>	<u>Million Tons</u>
Lakehead	18.439
Hamilton	11.810
North Fraser	10.457
Fraser River	3.768
Windsor	3.167
Toronto	2.869
Nanaimo	1.644
Port Alberni	1.135
Oshawa	.398
	<hr/>
Total	<u>53.287</u>

Ferry traffic not included

PUBLIC HARBOURS - TOP TEN FACILITIES IN CANADACargo Tonnages - 1974

<u>Facility</u>	<u>Million Tons</u>
Sarnia	8.552
Port Hawkesbury	8.081
Come-by-Chance	6.246
Sorel	5.219
Sault Ste. Marie	5.212
Baie Comeau	4.093
Sydney	2.353
Victoria	1.805
Campbell River	1.701
Hantsport	<u>1.675</u>
Total	<u>44.937</u>

Ferry traffic not included

DEVELOPING COUNTRIES

The port and harbour narrative section of the following country résumés has been compiled primarily from information provided by many of the posts and also from our own sources.

The sequence of countries listed in the sub-section follows the standard (November, 1975) Canada's Trade Commissioners and Commercial Officers listing.

Following the country detail is a table showing Canadian imports and exports in calendar year 1974.

We are grateful to the posts for their co-operation.

Canada's Trade Commissioners and Commercial Officers

ALGERIA

Commercial Division
Canadian Embassy
27 bis, rue d'Anjou
Hydra

Mailing address:

C.P. 225, Alger Gare
Algiers, Algeria

Phone: 60-61-90, 60-66-11

Telex: 52036

Territory: Tunisia

C. Courtemanche
Commercial Secretary

J.G. Kneale
Assistant Commercial Secretary

R.F. Desamore
Assistant Commercial Secretary

Achour Boukhedimi
Commercial Officer

ARAB REPUBLIC OF EGYPT

Commercial Division
Canadian Embassy
6 Sharia Mohamed Fahmy el Sayed
Garden City

Mailing address:

Qasr el Doubara Post Office
Cairo, Arab Republic of Egypt

Cable: CANADIAN

Phone: 23110

Territory: Libya, Sudan, Lebanon,
Syria and Jordan

D.J. Browne
Commercial Counsellor

C.R. Mann
Commercial Secretary

J. Pearce
Commercial Secretary

L. Tobia
Commercial Officer

ARGENTINA

Commercial Division
Canadian Embassy
Casilla de Correo 3898
Suipacha 1111
Buenos Aires, Argentina

Cable: CANADIAN

Phone: 32-9081 to 88

Telex: 121383 (121383AR CANAD)

Territory: Paraguay, Uruguay,
Falkland Islands

J. Kepper
Commercial Counsellor

K.R. Johnston
Assistant Commercial Secretary

C. Hoic
Commercial Officer

J.D. Etinger
Commercial Officer

AUSTRALIA

SYDNEY

Canadian Consulate General
8th Floor

A.M.P. Centre

50 Bridge Street
Sydney, N.S.W. 2000, Australia

Cable: CANADIAN

Phone: 231-6522

Telex: 089 20600 (CDN GOVT
AA20600)

Territory: State of New South Wales
and Queensland, Capital Territory,
Northern Territory, Papua New
Guinea, Solomon Islands, Nauru

W. G. Pybus
Consul General

J.D. Welsh
Consul (Commercial)

P. Marsden-Dole
Consul (Commercial)

M. Stinson
Vice-Consul (Commercial)

A.M. Casey
Commercial Officer

G. Adams
Commercial Officer

MELBOURNE

Canadian Consulate General
Princes Gate East Tower
17th Floor

151 Flinders Street
Melbourne 3000, Australia

Cable: CANADIAN

Phone: 63-8431

Telex: 089 30501 (CDN GOVT AA
30501)

Territory: States of Victoria, South
Australia, Western Australia,
Tasmania

D.S. Armstrong
Consul General

G.V. Tunnoch
Consul (Commercial)

P. Desbiens
Consul (Commercial)

L.B. Stryker
Commercial Officer

R.W. Haggert
Commercial Officer

CANBERRA*

Commercial Division
Canadian High Commission
Commonwealth Avenue
Canberra ACT 2600, Australia

Cable: DOMCAN

Phone: 73-3844

Telex: 089 62017 (DOMCAN AA
62017)

*The Canberra Office handles only
those trade inquiries that require
liaison with federal government
departments and agencies.

G.W. Green
Commercial Counsellor

J.W. Patterson
Commercial Secretary
(Metals, Minerals & Energy)

G.A. McGregor
Assistant Commercial Secretary

AUSTRIA

Commercial Division
Canadian Embassy
Luegerring 10
1010 Vienna, Austria

Cable: CANADIAN

Phone: 63-36-91

Telex: 75320 (DOMCAN A)

Territory: Bulgaria and Albania

Geo. Hazen
Commercial Counsellor

G.C. Jones
Assistant Commercial Secretary

L.N. Decrinis
Commercial Officer

R.J. Rossi
Commercial Officer

BELGIUM

Commercial Division
Canadian Embassy
rue de Loxum, 6
B-1000 Brussels, Belgium

Cable: CANADIAN

Phone: 513.79.40

Telex: 216.13 (DOMCAN BRU)

Territory: Luxembourg

N.W. Boyd
Commercial Counsellor

D.S. Shaw
Counsellor (Forest Products)

K.G. DeWolf
Commercial Secretary

P.A. Gagnon
Commercial Secretary

R. Spruyt
Commercial Officer

R. Lejeune
Commercial Officer

F. Keymolen
Commercial Officer

BRAZIL

BRASILIA

**Commercial Division
Canadian Embassy
Caixa Postal 07-0961
SES - Av. das Nações, lote 16
70.000 Brasilia DF, Brazil**

Cable: CANADIAN
Phone: Brasilia 23 7515
Telex: 38061 1296 (CANADA BSB)
Territory: Central West, Northeast
and Amazon Basin, Minas Gerais

C.W. Ross
Commercial Counsellor

R.J. Winter
Assistant Commercial Secretary

G. Vaughn
Commercial Officer

RIO DE JANEIRO

**Canadian Consulate
Caixa Postal 2164 - ZC-00
Edificio Metrópole
Avenida Presidente Wilson, 165/60
andar**

20.000 Rio de Janeiro - RJ - Brazil

Cable: CANADIAN
Phone: 242-4140, 242-4146,
242-4147, 242-4148 and 242-4149
Telex: 38021-22583 (ECAN BR)
Territory: States of Rio de Janeiro,
Espírito Santo and Bahia

R.B. Blake
Consul and Senior Trade
Commissioner

G.M. Darychuk
Vice-Consul and Assistant Trade
Commissioner

R. Vanderloo
Vice-Consul and Assistant Trade
Commissioner

J.M. da Costa
Commercial Officer

D.N. Andrade
Commercial Officer

**SAO PAULO
Canadian Consulate
Caixa Postal 22002
Edificio Top Center**

**Avenida Paulista, 854, 5o andar*
Sao Paulo, Brazil**

Cable: CANADIAN
Phone: 287-2122, 287-2234,
287-2601, 287-2213
Telex: 38011 (112323 CCAN BR.)
Territory: States of Sao Paulo,
Paraná, Santa Catarina, Rio Grande
do Sul, and Mato Grosso

*Businessmen are advised to send
only letters to this address. To en-
sure prompt arrival of parcels of any
kind, the sender should consult the
Sao Paulo office first about the best
method to use.

J.P. Bell
Consul and Senior Trade Commis-
sioner

A.H. Conradi
Consul and Trade Commissioner

L.R. Kohler
Consul and Trade Commissioner

H.H.E. Kock
Commercial Officer

E. Hromada
Commercial Officer

BRITAIN

LONDON

**Commercial Division
Canadian High Commission
One Grosvenor Square
London, W1X 0AB, England**
Cable: SLEIGHING London
Phone: 629 9492 (Area Code 01)
Telex: 261592 (DOMINION LDN)
Territory: England, Wales, Gibraltar

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Minister (Commercial)

D.S. McCracken
Commercial Counsellor

G.H. Musgrove
Commercial Counsellor
(Agriculture)

R.J.L. Berlet
Commercial Counsellor

W.K. Buck
Counsellor (Metals, Minerals &
Energy)

J.R. Caux
Commercial Counsellor

E.W. Smith
Counsellor (Timber)

J.J. Fillion
Commercial Secretary

H.G. Garland
Attaché (Fisheries)

B.M. Fillmore
Commercial Officer

C.I. Rooke
Commercial Officer

L.N. Laundry
Commercial Officer

G.D. Cooper
Commercial Officer

J.C. Mercer
Commercial Officer

A.D. Howell-Jones
Commercial Officer

K.P. Scott
Commercial Officer

GLASGOW

**Canadian Consulate
Ashley House
195 West George Street
Glasgow G22HS, Scotland**
Cable: CANTRACOM
Phone: 248-3026 (Area Code 041)
Telex: 778650 (CANTRACOM GLW)
Territory: Northern Ireland, Scotland

A.B. Brodie
Consul and Trade Commissioner

R. Banks
Commercial Officer

CHILE

**Commercial Division
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Ahumada 11, 10th Floor (street
address)
Casilla 771 (mailing address)
Santiago, Chile**
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Telex: 3520068 / 3520068 (DOMCAN)

J.N. Grantham
Commercial Secretary

R. A. Riis
Commercial Officer

CHINA, PEOPLE'S REPUBLIC OF

**Commercial Division
Canadian Embassy
10 San Li Tun
Peking, People's Republic of China**
Phone: 521475
Territory: Socialist Republic of Viet-
nam

F.M. Galbraith
Commercial Secretary

C.H. Cummer
Commercial Secretary

COLOMBIA

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Cable: CANADIAN
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Territory: Ecuador

E.C.H. Shelly
Commercial Secretary

M.A. Charles
Commercial Secretary

N. Kalisch
Assistant Commercial Secretary

A. Amador
Commercial Officer

J.L. Vasquez
Commercial Officer

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Calle 3 y Avda Central
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Phone: 230588

Telex: 2179 (DOMCAN)
Territory: Canal Zone, Nicaragua,
Panama

J.H. Treleven
Commercial Secretary

S. Rachlis
Assistant Commercial Secretary

M. Ruiz
Commercial Officer

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Calle 30 No. 518 esq. 7a Avenida
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Box 499 (HVA)
Ottawa, Ontario K1N 8T7
Cable: CANADIAN HAVANA
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Commercial Secretary

A.L. Romaguera
Commercial Officer

J.L. Callado
Commercial Officer

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Mickiewiczova 6
125 33 Prague 6, Czechoslovakia**

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R.W. Craig
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M. Hudec
Commercial Officer

DENMARK

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Prinsesse Maries Allé 2
Copenhagen V, Denmark**
Cable: CANADIAN
Phone: 01-21-36-22
Telex: 27036 (DMCNC DK)
Territory: Greenland

W. Mackenzie Hall
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T.W. Harboe
Commercial Officer

J.L. Neergaard (Mrs.)
Commercial Officer

EUROPEAN COMMUNITIES*

**Mission of Canada to the
European Communities
rue de Loxum, 6
B-1000 Brussels, Belgium**
Cable: CANADIAN
Phone: 513.0600
Telex: 21613 (DOMCAN BRU)
Territory: European Economic
Community, European Atomic
Energy Community, European Coal
and Steel Community

*The Mission monitors economic
and trade developments in the
European Communities in terms of
their potential and implications for
Canadian interests. The Mission is
also involved in development of in-
dustrial and economic co-operation
between Canada and the EEC.

T.D. McGee
Counsellor
(Metals, Minerals and Energy)

L. Lefebvre
Counsellor (Agriculture)

D.S. Shaw
Counsellor (Forest Products)

J. Castonguay
First Secretary

G. Rock
Second Secretary

Miss C. Tremblay
Second Secretary

FINLAND

**Commercial Division
Canadian Embassy**

**Pohjois Esplanadi 25B
00100 Helsinki 10, Finland**
Cable: DOMCAN HELSINKI
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C.R. Donley
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K.H. Valjakka
Commercial Officer

FRANCE

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35 Avenue Montaigne
75008 Paris, France**
Cable: CANADIAN PARIS
Phone: 225-99-55
Telex: 28806 (DOMCAN A PARIS)
Territory: Andorre, Monaco

F.I. Wood
Minister-Counsellor (Commercial)

M.A. Brault
Commercial Counsellor

J.N. Guerin
Commercial Secretary (Agriculture)

L. Lachapelle
Commercial Secretary

C.N. Fontaine
Commercial Secretary

H. Weissenberger
Assistant Commercial Secretary

J. Besnard
Commercial Officer

J.L. Baron
Commercial Officer

C. Balas (Miss)
Commercial Officer

J. Hourdeau
Commercial Officer

R. Woodhouse
Commercial Officer

GERMANY (FRG) BONN

**Commercial Division
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Friedrich-Wilhelmstrasse 18
53 Bonn, West Germany**

Cable: CANADIAN
Phone: 231061
Telex: 886421 (DOMCA D)
Territory: States of Baden-
Wuerttemberg, Bavaria, Hesse,
Rhineland-Palatinate, Saar

G.F. Mintenko
Minister-Counsellor (Commercial)

D.S.M. Baker
Commercial Counsellor

D.G. Ryan
Commercial Secretary
A.S. Poole
Commercial Secretary
G. Starr
Assistant Commercial Secretary

O. Schroeder
Commercial Officer

K. Bayerwaltes (Mrs.)
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H.E. Lanzrath
Commercial Officer

K. Schmitz
Commercial Officer

DUESSELDORF
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Immermannstrasse 3
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Territory: State of North Rhine-
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C.M. Forsyth-Smith
Consul General

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Consul and Trade Commissioner

G.M. Kostyrsky
Consul and Trade Commissioner

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Telex: 215555 (DMCNH D)
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Bremen, Lower Saxony and
Schleswig-Holstein; West Berlin

T.G.E. Woollam
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M.W. McQuinn
Consul and Trade Commissioner

K.D. McNamara
Vice-Consul and Assistant Trade
Commissioner

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W.M. Schefczyk
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J.M. Duval
Assistant Commercial Secretary

G.V. Bastounis
Commercial Officer

C. Swift
Commercial Officer

GUATEMALA
Commercial Division
Canadian Embassy
Edificio Maya, 5th Floor
Via 5, 4-50, Zone 4
Guatemala City, Guatemala, C.A.
Cable: CANADIAN
Phone: 65-497 and 65-393
Telex: 5206 (DOMCAN GU 5206)
Territory: El Salvador, Honduras

L.J. Taylor
Chargé d'Affaires

M.A. Bouchard
Consul and Commercial Secretary

R.V. Castillo
Commercial Officer

H. Cerezo
Commercial Officer

HONG KONG
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Commission for Canada
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Cable: CANADIAN
Phone: 5-282224, 5-282423
Telex: 73391 (DOMCAN 73391)
Territory: Macao

M.C. Spencer
Trade Commissioner

J.P. McLachlan
Assistant Trade Commissioner

B. Yeung
Commercial Officer

F. Chau
Commercial Officer

HUNGARY
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H.W. Guy
Commercial Secretary

S.B. Gyonyor
Commercial Officer

INDIA
Commercial Division
Canadian High Commission
P.O. Box 5208
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New Delhi 21, India
Cable: CANADIAN
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Telex: 2346 (DOMCAN ND1 2346)
Territory: Bhutan, Sri Lanka, Nepal

V.G. Lotto
Counsellor (Development and Com-
mercial)

P. Dingleline
Commercial Secretary

C. Marshall
Commercial Secretary

T.V. Subramanian
Commercial Officer

R.C. Kamo
Commercial Officer

INDONESIA
Commercial Division
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Jakarta, Indonesia
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44345)

C.A. Carruthers
Commercial Counsellor

H. McNairnay
Assistant Commercial Secretary

P. Pichette
Assistant Commercial Secretary

A.A. Sonda
Commercial Officer

P. Hutasoit
Commercial Officer

IRAN
Commercial Division
Canadian Embassy
Avenue Takhte Tavoo
Avenue Daryaye Noor, No. 57
Tehran, Iran
(All mail to:)
P.O. Box 1610
Tehran, Iran
Cable: CANTRACOM
Phone: 623310, 623549, 622975

Telex 212337 (MCAN IR)
Territory: Kuwait, Bahrain, United Arab Emirates, Oman and Qatar

G.D. Valentine
Commercial Counsellor

F. Veenema
Commercial Secretary

P.R. Zalite
Commercial Secretary

B. Adam
Assistant Commercial Secretary

M.H. Yassini
Commercial Officer

H. Ghotb
Commercial Officer

IRAQ

**Commercial Division
the Canadian Embassy
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Baghdad, Iraq**

**(Embassy located in the city of Al-Mansour)*

*Cable: DOMCAN BAGHDAD
Phone: 5521459*

*Telex: 2486 Answerback
DOMCAN IK*

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Assistant Commercial Secretary

R. Sadurian
Commercial Officer

IRELAND

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Commercial Secretary

J. Sullivan
Commercial Officer

ISRAEL

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Tel Aviv, Israel**

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Telex: 341293

Territory: Cyprus

B.E. Baker
Commercial Secretary

D. Morin (Miss)
Assistant Commercial Secretary

B. Fynne
Commercial Officer

ITALY

ROME

**Commercial Division
Canadian Embassy
Via G.B. de Rossi 27
00161 Rome, Italy**

Cable: CANADIAN

Phone: 864-327/855-341

Telex: 61056 (DOMCAN ROME)

Territory: Provinces of Toscana, Marche, Umbria, Lazio, Abruzzi-Molise, Puglia, Campania, Basilicata, Calabria, Sicilia, Sardegna. Other countries: Malta

R.A. Bull
Minister (Economic/Commercial)

V. Wightman
Counsellor (Agriculture) and
Permanent Representative of
Canada to F.A.O.

R.F. Andrigo
Commercial Secretary

D.A. Rosenthal
Assistant Commercial Secretary

G. DeLuca
Commercial Officer

M.J. McDermott
Commercial Officer

C. Marati
Commercial Officer

MILAN

**Canadian Consulate General
Via Vittor Pisani 19
20124 Milan, Italy**

Cable: CANTRACOM

Phone: 652-600/657-0451

Telex: 31368 (CANTRCOM MILAN)

Territory: Provinces of Emilia-Romagna, Lombardia, Piemonte, Trentino-Alto Adige, Veneto, Liguria, Trieste, Val d'Aosta, Friuli-Venezia Giulia

C.J. Van Tighem
Consul General and Senior Trade
Commissioner

D.C. Webb
Consul and Trade Commissioner

S.A. Bigsby
Vice-Consul and Assistant Trade
Commissioner

U. Boschetti
Commercial Officer

W.H. Skouse
Commercial Officer

A. Todesco
Commercial Officer

E. Recchi (Miss)
Commercial Officer

IVORY COAST

**Commercial Division
Canadian Embassy
P.O. Box 21194
Le Général Building
Cor. Avenue du Commerce et
Bottreau-Roussel Plateau
Abidjan, Ivory Coast**

Cable: DOMCAN ABIDJAN

Phone: 32-20-09

Telex: 593 (DOMCAN ABIDJAN 593)

Territory: Gambia, Guinea, Guinea-Bissau, Liberia, Mali, Mauritania, Niger, Senegal, Upper Volta, Cape Verde Islands

R. Goulet
Commercial Secretary

G. Willows
Assistant Commercial Secretary

T. Agbo-Panzo
Commercial Officer

JAMAICA

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Canadian High Commission
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Dominion Life Bldg.
Knutsford Boulevard
Kingston 10, Jamaica**

Cable: CANADIAN

Phone: 92-61500/92-61504

Telex: 2130 (BEAVERJA)

Territory: Bahamas, Belize, Cayman Islands, Turks and Caicos Islands

C.D. Miller
Commercial Counsellor

R. Stephenson
Commercial Secretary

M.J. Hollebhone (Mrs.)
Commercial Officer

JAPAN

**Commercial Division
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3-38 Akasaka 7-Chome, Minato-ku
Tokyo 107, Japan**

Cable: CANADIAN

Phone: 408-2101/8

Telex: TK2218 (DOMCAN TK2218)

Territory: Guam

R.M. Dawson
Minister (Economic/Commercial)

R.H. Dorrett
Commercial Counsellor

J.G. Price
Commercial Counsellor

W.R. Parkinson
Counsellor (Agriculture)

P. Lafleur
Counsellor (Metals, Minerals &
Energy)

R.A. Fairweather
Commercial Secretary

D.G. Summers
Assistant Commercial Secretary

M. St. Laurent
Assistant Commercial Secretary

S. Kiyohara
Commercial Officer

Y. Yazaki
Commercial Officer

S. Matsuura
Commercial Officer

S. Fukuda
Commercial Officer

R. Yamaoka
Commercial Officer

Y. Yabe
Commercial Officer

T. Higuchi
Commercial Officer

Y. Kagi
Commercial Officer

N. Takazoe
Commercial Officer

KENYA
Commercial Division
Canadian High Commission
P.O. Box 43778
Nairobi, Kenya

Situated in: Comcraft House
Haile Selassie Ave.

Cable: DOMCAN NAIROBI
Phone: 334033

Telex: 22 198 (DOMCAN NRB)
Territory: Ethiopia, Somali
Republic, Tanzania, Uganda,
Democratic Republic of
Madagascar and the Seychelles

O.W. Bennett
Commercial Counsellor

R.D. Ballhorn
Assistant Commercial Secretary

P.E. Musira
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Cable: CANADA SEOUL

Phone: 73-0182/4
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Commercial Counsellor

G.H. Bates
Assistant Commercial Secretary

B. Chee
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Commercial Division
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P. McKellar
Commercial Secretary

R. Noble
Assistant Commercial Secretary

G.E. Belanger
Commercial Officer

L.F. Arguelles
Commercial Officer

J.A. Pahnke
Commercial Officer

MOROCCO
Commercial Division
Canadian Embassy
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Robert Lee
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ALGERIAGeneral Information

Area	- 920,000 sq. miles
Population	- 15,000,000
Imports	- machinery, manufactured goods, dairy produce, cotton goods
Exports	- oil, LNG, mineral ores, phosphates, ammonia, fruits, wines, tobacco
Trade Partners	- European Economic Community

Economy

Agriculture is one of the bases of Algerian economy. In 1971 more than half the population depended upon it for a living. This importance is declining due to the growth of the petroleum industry and exploitation of natural gas and other mineral deposits such as iron ore, phosphates, lead, zinc and tungsten.

Port and Harbour Development

The Algerian government gives high priority to maintaining and improving present port infrastructure and purchasing new equipment.

The total transportation system consists of eight commercial ports and some 20 fishing ports, a small fleet of ocean vessels, upwards of 2,300 miles of petroleum pipeline and 650 miles of natural gas pipelines. The country has 2,500 miles of railways and regional and local roads connect major Algerian cities with Tunisia and Morocco. Algeria has three international and 10 secondary airports with two national airlines.

The eight commercial ports are listed and proposed expenditures on further development are shown. Port operations are generally inefficient with serious congestion in transit and storage areas. Ship turn-around time is long, berth rates high and delays frequent. The Algerian government and its Office of National Ports is well aware of the shortcomings and continue to seek technical assistance.

A new port is being constructed at Bethiouna with IBRD assistance in the amount of \$70 millions. Consultants for this work are Ralph Parsons in the U.S. and the total cost of the project to be finished in 1978 is estimated at \$293 millions.

Port operations at all general cargo ports require improvement; proposed projects include management and consultant services with provisions for training. Heavy capital expenditures for cargo handling equipment will be required. Estimated expenditures on Algerian port development for 1974 - 1977 total in the order of \$380 millions - see tabulated detail.

Forecast Expenditures on Port Development

1974 - 1977

<u>Port</u>	
Annaba	\$ 8,330
Alger	5,950
Arzew	10,710
Bethiouna	285,600
Mostaganem	4,760
Oran	8,330
Skikda	21,420
Tipaza	-
Fisheries Ports	7,140
Navigational Aids	4,760
Studies	11,900

\$ millions

I.T.C. Contact - Commercial Secretary in Algiers.

ARAB REPUBLIC OF EGYPTGeneral Information

Area	- 386,198 sq. miles
Population	- 30,000,000
Imports	- wheat, industrial machinery, vehicles and components, petroleum, chemicals and wood products
Exports	- cotton, cotton goods, textiles, rice and oil products
Trade Partners	- U.S.S.R., U.S.A., F.R.G. and Italy

Economy

The Republic's economy is primarily agricultural and industrial with cotton, corn, wheat, rice and some vegetables being the chief agricultural products. Industrial products include textiles, food, chemicals, fertilizers and tobacco products. Oil production is increasing and other minerals in modest commercial quantity are manganese, phosphates, asbestos, gypsum and gold. Principal trade agreements have been with Eastern European countries and the Soviet Union but Canadian and U.S.A. trade with Egypt is now increasing.

Port and Harbour Development

Assisted by World Bank (IBRD) funds, plans call for the improvement and modernization of existing port facilities at Alexandria and project preparation is now underway.

Also under an IBRD loan amounting to \$50 million financial assistance is being provided to finance a portion of foreign exchange costs to rehabilitate the Suez Canal. This World Bank project includes procuring materials and equipment, reconstructing auxiliary facilities together with technical assistance and studies. The total cost is estimated at \$288 million of which the Suez Canal Authority and Government will provide \$107 million, Saudia Arabia \$50 million, United Arab Emirate \$30 million and Qatar \$10 million. Bids are being invited on the basis of international competition.

The Port Said harbour project is associated with Suez Canal rehabilitation. Existing facilities at the Port will be modernized to increase harbour capability from 1 million to 3 million tons annually. The work involves enlargement of wharves and construction of a new wharf to take large vessels including super-tankers. Additionally it is proposed to build a new harbour to the south of the existing one handling 10 million tons of cargo annually. This project will be undertaken in phases and be completed by the year 2000; the first stage is scheduled for completion in 1980.

ITC CONTACT - Commercial Division Cairo - Arab Republic of Egypt

ARGENTINAGeneral Information

- Area - 1,079,985 sq. miles
- Population - 23,246,000
- Imports - machinery and equipment, iron and steel products, chemicals, fuels and lubricants.
- Exports - meat and meat products, grain, wool, hides, linseed oil and agricultural products.
- Trade Partners - Italy, U.S.A., U.K., Netherlands and F.R.G.

Economy

Agriculture accounts for about 90% of export earnings. Argentina is the largest exporter in the world of meat and meat products. Industry is the principal employer and products make Argentina largely self-sufficient in consumer goods. As a member LAFTA, preferences are granted on certain items to other LAFTA countries.

Port and Harbour Development

Argentine ports located along the Atlantic coast handle 95% of its international trade. The waterway system formed by the River Plate and tributaries cover more than 1600 miles of navigable routes. Total cargo handled in 1973 was 79.8 million tons and practically all water traffic uses the Plate.

There are 177 ports and loading places in Argentina and 162 are situated on rivers with 15 along the Atlantic coast. However Port Authority mentions only 101 ports of which 85 are on the rivers. Dredging and technical improvement are the responsibility of the Department of Public Works Ministry, the National Department of Port Construction and Navigable Waterways. A listing of principal ports is shown separately. National goals called for emphasis on agricultural products and an increase in grain exports.

Port extensions, wharf construction and improvements are planned for Rosario. Bahia Blanca will be remodelled to cater for increased traffic. In remodelling Rosario areas will be cleared for urban and recreational use. Bahia Blanca will be developed and deepened to 45 feet to become the center for cereal exports and large grain carriers.

Planned investments of the National Port Administration for the period 1975 - 1977 are in the order of \$24.2, \$17.6 and \$31.8 millions respectively.

Campana is the nearest port to Buenos Aires when navigating the Mitre Channel. The Argentine NPA is studying new wharf construction for vessels up to 30,000 ton displacement.

At the port of St. Nicolas the existing wharf is being enlarged and a new Administration Center constructed. Existing wharves at Villa Constitucion are to be reconstructed and equipped. The Argentine government foresees the construction of a deep-sea port at Punta, Médanos with 50 foot draft allowing operation of all types of vessels with emphasis on large grain carriers. However, since the cost is forecast to be in the order of \$1000 millions some opposition is voiced from other government departments.

Argentina has plans for supplying new cargo handling equipment such as floating cranes, side loaders, truck-mounted cranes and derrick boats at an estimated cost of 7.5 million, 8.6 million and 11.2 million in 1975, 1976 and 1977. NPA has called for tenders at an international basis and will seek licensing arrangements for domestic production of certain items.

PORT CAPACITY

<u>Ports</u>	<u>Maximum Depth (feet)</u>
Parana River Area	
Barranqueras	-
Santa Fe	21
San Martin	30
Rosario	30
Villa Constitucion	23
San Nicolas	30
Campana	21
Uruguay River Area	
Colon	12
C. del Uruguay	18
River Plate Area	
San Isidro	-
Buenos Aires	29
La Plata	28
Atlantic Coast Area	
Mar del Plata	28
Quequén	26
Bahia Blanca	40
C. Rivadavia	36

URUGUAYGeneral Information

- Area - 72,172 sq. miles
- Population - 2.8 millions
- Imports - raw materials, fuels and lubricants, machinery and parts, automotive vehicles, construction materials and food stuffs.
- Exports - wool, animals and meat, hides and skin.
- Trade Partners - U.S.A., U.K., Netherlands, F.R.G. and Spain

Economy

Agricultural and livestock production are the backbone of the national economy of Uruguay. Roughly 70 percent of the land is devoted to livestock raising. The principal crops are wheat, linseed, maize, sunflower, rice and cotton. Some peaches, oranges, tangerines, pears and grapes are also grown.

Industry comprises meat packing, lumbering, oil refining, cement manufacture, rolling mills and light engineering, electrical, chemical and textile production.

Port and Harbour Development

The National Port Administration is responsible for improvement, modernization, development and administration of all Uruguayan ports. The main port is Montevideo and other smaller river ports are Juan Lacazé, Colonia, Nueva Palmira, Fray Bentos, Paysandu and Salto.

The two more important port projects are construction of a deep waterway on the Atlantic coast in the Rocha area and the extension of the Montevideo port. Work on the latter project has not been progressing too actively, draining of the access channel up to a depth of 32 feet has been carried out.

A small loan from World Bank (IADB) was used by the Port Authority to buy three diesel electric locomotives and forklift trucks. Further negotiations are in hand for a second loan to purchase cranes and other cargo handling equipment.

I.T.C. Contact - Commercial Counsellor in Buenos Aires

BRAZILGeneral Information

- Area - 3,286,470 sq. miles
- Population - 92,000,000
- Imports - manufactured goods, machinery, transport equipment, fuels, cereals, steel and steel stripping, motor vehicle parts and precision parts
- Exports - foodstuffs, coffee, beverages, iron ore and concentrates, cotton, semi-processed materials, chemical and pharmaceutical products
- Trade Partners - U.S.A., F.R.G., Argentina, France, Netherlands and Venezuela

Economy

Upwards of 90% of Brazil's foreign exchange is derived from agricultural exports of which coffee is the principal commodity. The population is 52 percent rural. Brazilian livestock production now matches that of Argentina. Mining is becoming increasingly important and minerals include iron, zirconium, titanium, chrome ore, mica, beryllium and industrial diamonds.

Automobile, truck and bus production is increasing and cotton weaving is one of the country's most important manufacturing industries. Brazil possesses great potential for hydro-electric power.

Port and Harbour Development

Under a World Bank (IBRD) loan of \$45 millions, the Port of Santos is being improved. Modernization includes construction of a 62,000 ton corn silo and berth, container terminals, road and rail access to port facilities, provision of dredging equipment and associated consulting services. This project is current and the total estimated cost is \$78.5 millions. Undisbursed IBRD funds are in the order of \$40 millions.

The Brazilian Government has initiated a new policy which will convert the main ports into "mixed-economy companies". The Federal Government will be the major shareholder.

Expansion and improvement of Rio de Janeiro began a year ago

and calls for an initial investment of some \$125 millions during the period 1974-76. Principal improvements are:

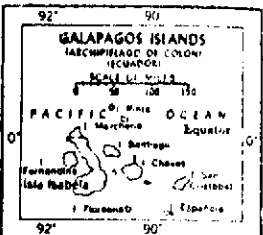
construction of 1,200 meters of quay in the Caju region for the installation of a salt and fertilizer terminal; container terminal; facilities for bulk handling and storage of materials such as imported iron and steel products;

building of a terminal at the island of Pombeba for bulk handling of liquid chemicals and petrochemicals (the island will be connected to the mainland by a bridge to enable easy flow of the goods by road or rail transport vehicles).

construction of the Sepetiba Bay port, with a coke and coal terminal capable of loading and unloading 8 million tons of coal per year.

A second project proposes to join the Ports of Rio and Sepetiba with the introduction of modern cargo handling techniques and facilities to accelerate and streamline the flow of merchandise. A container repair facility will be necessary. It is estimated that this second stage may also cost in the order of \$125 millions and is scheduled for 1977-78.

Recent equipment imported by the Port of Rio and worth some \$10 million includes one 100 metric ton crane (on rails), 2 Clamshell buckets; 55 fork-lift trucks of capacity ranging from 10 to 16 metric tons; 2 electric diesel locomotives of 1.60 metric gauge; 30 wagons; 4 high-way-railway tractors; 2 high cabin cranes on rubber tyres; 4 cranes on 70/80 metric ton tyres and 1 Lorrain 150 ton crane. The first Brazilian made container unit has just been produced under license from the Canadian company Steadman Ltd.



SOUTH AMERICA

LAMBERT AZIMUTHAL EQUAL AREA PROJECTION

SCALE OF MILES
0 100 200 400 600

SCALE OF KILOMETERS
0 100 200 400 600

Capitals of Countries: ★
International Boundaries: - - - - -
Coasts: ————

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C H I N AGeneral Information

Area: 3,745,000 sq. miles

Population: Approximately 900 million (1975)

Imports: Food stuffs, wheat, barley, maize, oil, raw materials and manufactured goods (especially complete plants which upgrade technology and provide import substitutes).

Exports: Rice, soybeans, maize, sugar, fruits, silk, tea, petroleum, and coal, growing amounts of labour-intensive manufactured goods.

Trade Partners: Japan, Hong Kong, U.S.A., FRG, U.K., Canada, France.

Economy

About 80 percent of the population is rural, engaged in agriculture during the tending season and in local workshop industry during slack times. Emphasis is placed upon major construction works and local projects, built and financed by communes. In creating an industrial state, there has been a large expansion of communications particularly by rail and water. China also now has three or four international standard airports.

In the first year of communist rule 1949-50, inflation was controlled and the financial balance has since remained fairly stable. The value of foreign trade is only about five percent of Chinese GNP (estimated at \$240 billion in 1975) and the majority of exports are agricultural and raw materials (particularly petroleum). However, the proportion of made-up textiles and light industrial goods continues to increase.

Between 1950 and 1972, China's total foreign trade never rose above US\$6 billion fluctuating from \$1.2 billion in 1950 to \$5.9 billion in 1972. The figure for most of the intervening years averaged between \$3 to \$4 billion. In 1973, the figure shot up to \$9.8 billion and in 1974 to \$13 billion. As this total trade figure has grown, China's imports have overtaken exports to the point where the deficit reached about \$1 billion in 1973. In 1974, the deficit grew to \$1.1 billion. By 1975, China was faced with overseas borrowings in order to cover its trade deficit and therefore cut back on purchases, thus reducing the deficit to about \$140 million. In 1976, it is expected that China will achieve a zero balance in the foreign trade account.

China has abundant coal supplies and is well supplied in petroleum and oil shale, thus providing a sound industrial base. It also has the potential and developed water power from numerous swift falling rivers, many with large reservoir spaces upstream.

The basis for large-scale modern industrial development is present in China's known resources. Estimates of their extent are constantly being revised upward, and new geological surveys and exploration are continually adding to China's knowledge of its natural resource endowment and environment.

Port and Harbour Development

The sharp rise in export-import trade has meant serious congestion at China's major ports. The heaviest traffic is found at Dairen, Hsinking, Shanghai and Whampoa. The People's Republic has 13 other major ports which also receive foreign vessels. Dairen handles general cargo and is a base for oil exports. Hsinking handles general cargo and exports oil, coal and other minerals. Shanghai is the largest port and Whampoa is concerned primarily with general cargo and packaged goods.

China's present economic policies are toward a course of self-reliance. The Chinese show reluctance to consider participation in joint ventures and in the use of outside engineering consultants in the re-design and upgrading of their port facilities.

The upgrading of China's ports is of vital importance to the development of the country's economy. China has until recently exported increasing quantities of crude oil - particularly to Japan - in order to pay for the growing amount of technologically sophisticated plant which has been imported to upgrade certain sectors of local industry and to provide import substitution. However, from a high of 8.1 million metric tons of crude oil sold to Japan in 1975, 1976 exports of crude oil have dropped back to 6.1 million metric tons.

Whether the reduction in oil exports is a consequence of China's growing political need to be self-sufficient or because of growing domestic demands or because of the strain on transport facilities, in any event the Chinese continue to develop their ports as though they were going to continue to expand their trading relations with the world.

From the beginning of 1973 until the end of 1975, China has built more than 40 new deep water berths to accommodate vessels of more than 10,000 tons. Among these extensions are berths for vessels carrying coal, mineral ores, iron and steel, and for 25,000 to 50,000 ton oil tankers and also special berths for container shipments. These works included at Canton: two 10,000 ton class berths for mineral ore carrying vessels and one 50,000 ton oil tanker terminal; at Shanghai, 16 new or reconstructed 10,000 ton class berths; at Tientsin, 10 new 10,000 ton capacity berths. This year (1976) the major port expansion completed so far has been the new crude oil wharf at Dairen. This wharf is part of the deep water port under construction in the Liaoning Province which the Chinese say will be the largest and most technologically advanced port in the country.

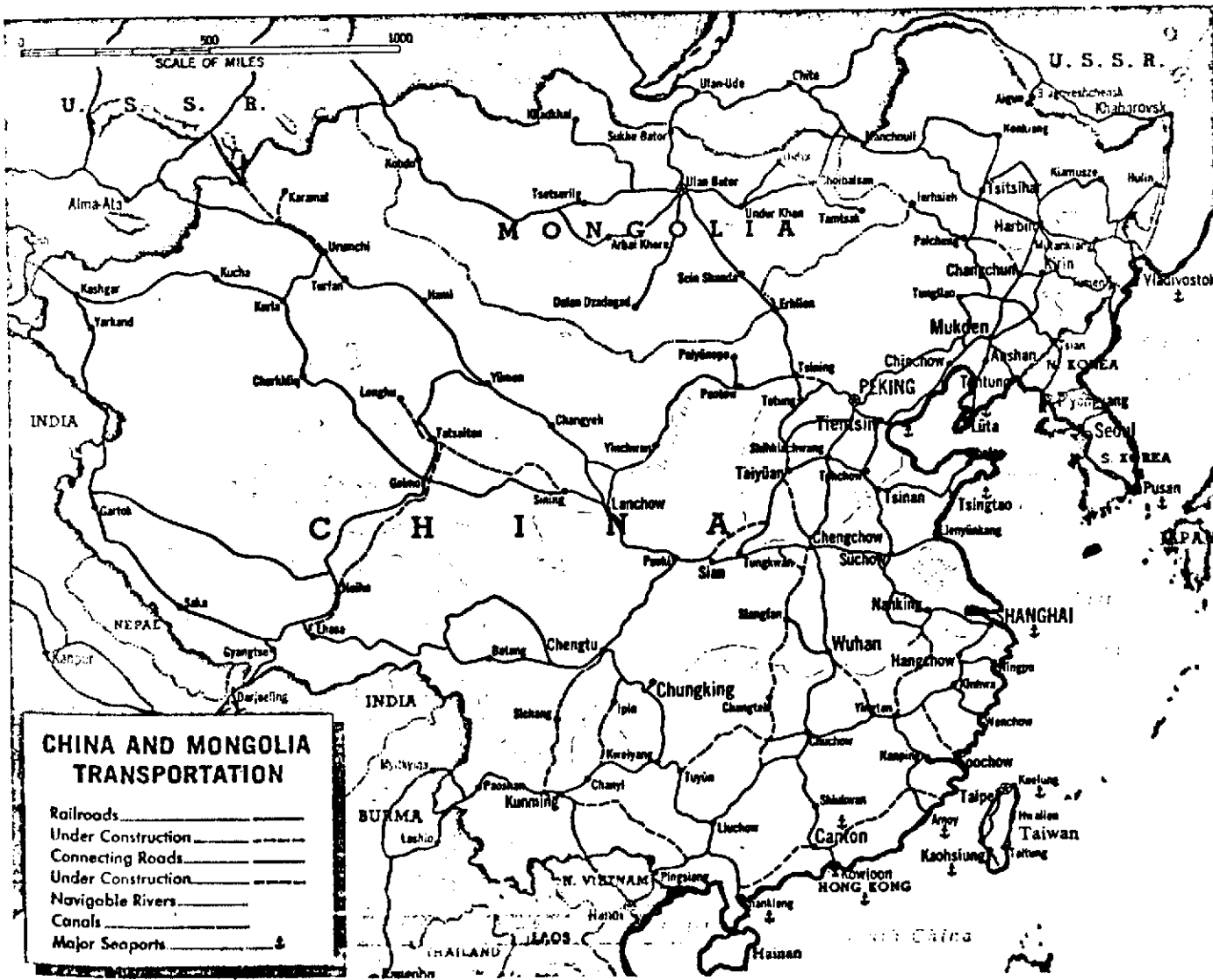
- 3 -

China's maritime fleet now totals about 4.5 million tons deadweight and an additional 2 million tons are controlled by the Chinese through Hong Kong and Macau. China has been adding to her fleet by building ships in the 10,000 ton class of which about 45 have been launched by Shanghai shipyards alone in the last five years. Other major shipyards are located at Dairen, Tientsin and Canton. At Dairen, the growth of the scale of Chinese shipbuilding has been emphasized with the announcement that a 50,000 ton tanker is under construction to be powered by an 18,000 HP engine of Chinese design. The largest tanker previously constructed was 24,000 tons deadweight.

The development of Chinese ports and port handling equipment is organized into a series of five-year plans. Because of recent political changes and the resulting economic re-alignment concerning foreign trade, the fifth five-year plan is apparently being revised and the construction projects concerning ports and harbours are now less clearly ranked in terms of economic development priorities.

Until such time as the political situation stabilizes, it is difficult to obtain information concerning the actual development plans for Chinese ports and harbours. In a general fashion, however, China has given top priority to improving terminals, cargo handling equipment and developing new ports. The pace of development is to be accelerated because present capacity is inadequate - even if foreign trade does not grow as had been previously predicted. Within the fifth five-year plan which began on January 1, new construction is to include special container terminals and larger oil wharves, some of which are already under construction, together with special ports for grains and ores. These developments are a continuation of the new container terminal at Hsinking and the grain handling terminal in Shanghai.

I.T.C. Contact - Commercial Counsellor - PEKING



SRI LANKAGeneral Information

Area	-	225,232 sq. miles
Population	-	12,000,000
Imports	-	food, machinery, manufactured goods, transport equipment, textiles, clothing, crude materials and fuels
Exports	-	tea, rubber and coconut products
Trade Partners	-	U.K., China, Australia, U.S.S.R., India and U.S.A.

Economy

Agricultural products such as tea, rubber and coconut form the basis of Sri Lanka's economy and account for more than ninety percent of its foreign exchange. The principal industries are tobacco products, food processing and most large manufacturing units are Government owned.

Port and Harbour Development

The principal ports are Colombo, Trincomalee and Galle.

At Colombo extensions are being made to the quay and the deepening of the harbour to accommodate foreseen container traffic. About ten acres of land will be reclaimed behind the quay and the work is expected to be completed by 1977. Should container traffic develop, gantry type cranes, fork-lifts and straddle carriers will be necessary. At the same port construction is underway to provide berthing facilities for tankers up to 60,000 dwt. The main work is dredging a channel outside the harbour and within harbour presence to accommodate vessels of up to 42 feet draft.

By the end of 1976 the construction of two additional berths for palletized cargo at the Port of Trincomalee should be completed. The additional equipment required here will be forklift trucks.

In very general terms, port improvements in Sri Lanka will call for the gradual replacement of cranes and other cargo handling equipment which are beyond useful service. These items will be purchased under approved annual expenditure and on international tender basis.

I.T.C. Contact - Commercial Division Colombo, Sri Lanka

SINGAPOREGeneral Information

- Area - 224.5 sq. miles
- Population - 2 million
- Imports - crude rubber, petroleum products, vehicles, foodstuffs, cigarettes and tobacco
- Exports - crude rubber, petroleum products, textiles, coffee, spices, cotton goods, canned fruit and wood products
- Trade Partners - West Malaysia, U.K., Sarawak, U.S.A. and Japan

Economy

The island economy of Singapore is primarily based upon trade and commercial services. However, in recent years it has been adding industrialization to its resources. Shipbuilding, repair and the micro-electronic industry now contribute significantly to the economy. Increased tourism has led to a boom in the construction and accommodation business.

Port and Harbour Development

The Port of Singapore has six ocean gateways, five of which are owned and operated by the Port of Singapore Authority, namely, Keppel Wharves, the Container Terminal, Telok Ayer Basin, Sembawang Port and Pasir Panjang Wharves, while the sixth, Jurong Port, is managed by the Authority on behalf of Jurong Town Corporation.

Keppel Wharves, the main gateway for conventional vessels, have 4,800 metres of wharves which can accommodate 31 ocean going vessels at any one time.

The Container Terminal at East Lagoon has three main container berths totalling 920 metres, one 220-metre berth and a cross berth of 210 metres. Freight stations with a total floor area of 21,000 sq. metres are available for the stuffing and unstuffing of containers. The Terminal is also fully equipped with container quay cranes, transtainers, van carriers, tractors and trailers and forklift trucks for the handling of containerized cargo. In anticipation of the increase in containerized traffic, PSA has commenced work on the construction of two more container berths measuring a total of 640 metres. The berths will come on stream

by 1978/79 when completed, the project is estimated to cost \$78million. Plans are also on hand to develop a 64-hectare inland container depot for the stuffing and unstuffing of containers. Initially, four freight stations with some 30,100 sq. metres of covered space will be built at an estimated cost of S\$19 million.

Telok Ayer Basin caters for shallow-draught coastal vessels as well as lighters and barges carrying cargo from, or to, vessels working in the anchorages. The wharves for the vessels, which can accommodate about 10 vessels, have been affected by a major reclamation project for the area but new wharves will be built to replace the affected wharves.

Sembawang Port, the gateway for low-value high-volume cargo, has five berths totalling 820 metres. No new development is planned for the gateway.

Pasir Panjang Wharves - a coastal port with 2,100 metres of wharves for lighters, barges and coastal vessels and supported by 180,000 sq. metres of godown space - commenced operations in November 1974. By 1977, additional warehousing space totalling 20,000 sq. metres would be constructed. This development is partly financed by the Asian Development Bank for which a loan of US\$8.1 million has been obtained to meet the cost of the foreign exchange element. Plans are on hand to reclaim another 23 hectares of the foreshore at Pasir Panjang to provide 71,000 sq. metres of back-up space and berths for coastal and ocean-going vessels.

Jurong Port is Singapore's gateway for handling bulk cargo and serves mainly the Jurong industrial estate. Its five deep-water berths totalling 1,100 metres are equipped with gantry cranes, conveyor systems and pneumatic suction units to handle bulk cargo such as cement clinker, grain and fertilizers. Construction is underway to extend the wharves by some 1,800 metres. This is scheduled for completion by 1977.

A further Jurong Wharves expansion program, which includes ADB funding estimated at \$8 millions, is scheduled for completion in 1976. The final design was done by Jurong Town Corporation and supervision of engineering works was undertaken by Sir Bruce White, Wolfe Barry & Partners, U.K.

A centre for receiving and treating oil slops and sludge is being built at Pulau Sebarok. This project involves the reclamation of

36.4 hectares of land at S\$16.9 million and the construction of slop and sludge reception and treatment facilities at S\$20.1 million.

To promote international trade and commerce, the S\$83 million Singapore Maritime Centre is being constructed at Jardine Steps. When completed in 1978, this 12-storey building will provide as a modern terminal for passenger liners and ferries. It will house the Singapore World Trade Centre, import and export firms, insurance and banking establishments, shipping offices and other related trading organizations..

Brunei

A deepwater port has recently been completed in Muara Harbour. British and Japanese companies were responsible for concrete wharfs, container berths, general cargo berths and other importance at a total cost in the order of \$41 millions. This new port was first opened to commercial shipping early 1973, and the Ports Department established to manage and operate the ports of this state. Phase II at Muara Port foresees extending the wharf apron and deepening the channel to a depth of 36 feet at low tide.

COLUMBIAGeneral Information

- Area - 456,535 sq. miles
- Population - 26 millions
- Imports - newsprint, organic chemicals, automotive vehicles and parts, industrial machinery, and equipment, iron and steel products, and petroleum.
- Exports - coffee, other agricultural products, textiles and coal
- Trade Partners - U.S.A., F.R.G., U.K., Spain, France, Japan and Canada.

Economy

Colombian economy is basically agricultural. The most important crop is coffee and this provides 60% of the value of Colombia's exports. Other agricultural products include bananas, rice, cocoa, sugar cane, cotton, tobacco and grains. Livestock forms an important area of the agricultural industry.

Colombia is one of South America's important producers of coal.

Manufacturing is a fast-growing sector of the economy. The products include food products, beverages, textiles, shoes, clothing, glass rubber goods, leather goods and metal products.

Colombia is rich in minerals such as gold, silver, copper, lead, mercury, emeralds, platinum, nickel and uranium.

Colombia is a member of LAFTA, the Andean Pact and has a most-favoured-nation agreement with Canada.

Port and Harbour Development

Principal Colombian seaports are Cartagena, Barranquilla (also port on the Magdalena River, main river artery of the country) and Santa Marta on the Caribbean Coast, and Buenaventura on the Pacific Coast; the smaller port of Tumaco is also on the Western Coast. Every port is administered and directed by a Board of Directors and a Manager, under the Direction General of the Colombian Port Authority (COLPUERTOS), recently organized as a commercial state enterprise.

Leticia is an international river port on the Amazon and has growing commercial activities with border line countries. Its international airport facilities freight handling to the interior of the country. Leticia is important in terms of agriculture and forest products.

The master plan for port improvement was launched in 1965 and foresees modern facilities to accommodate increasing for traffic up to the year 1990. The plan implies investments of \$520 millions of which upwards of US\$295 millions have been invested by 1973 and the balance will be expended over the next two to three years. This second stage will be partly financed with a new loan from the Inter-American Development Bank (B.I.D.).

The main activity will be focused on the ports of Barranquilla and Buenaventura and Cartagena and Santa Marta and includes construction, expansion and repair of piers and warehouses; the paving of access ways, cargo-handling and vehicle-parking areas; the installation of electricity, water supply and sewer systems, and the introduction of new operating techniques in the four ports. B.I.D. funds will be in the order of \$11 millions.

Concurrent with the extension of Colombian ports, it follows that improved cargo handling equipment and methods will be necessary. Tenders have already been issued on the international basis for 103 fork-lift trucks of 5,000 lb. capacity.

ECUADORGeneral Information

- Area - 104,505 sq. miles
- Population - 6.95 millions
- Imports - machinery and transport equipment, chemical products, metals, textiles and textile goods
- Exports - bananas, coffee, cocoa, rice and petroleum
- Trade Partners - U.S.A., Japan, F.R.G., Venezuela, Colombia and U.K.

Economy

Ecuador is primarily an agricultural country. Its forests yield such materials as balsa, rubber, cinchona, (quinine) and kapok. The forests are largely unexploited due to isolation.

Manufacturing is modest in size but is growing rapidly. Principal products are foodstuffs, lumber and paper, chemicals and pharmaceuticals. Ample raw materials are available.

Ecuador is the world's largest exporter of bananas. Also grown in abundance are coffee, cocoa and rice. It is an important producer of crude petroleum, the revenue from which has been providing substantial funds for imports and social programmes throughout the country.

Ecuador is a member of LAFTA and of the Andean Pact and Canada receives most-favoured-nation treatment.

Ports and Harbours Development

Ecuador's main seaports are Guayaquil, Manta, Esmeraldas, Puerto Bolivar and Posorja. The ports are administered, operated and maintained by their individual Port Authorities, which are governed by a Board of Directors and a Port Manager. At the national level the administration of Ecuadorean ports is a hierarchical affair with four levels: Ministry of Defence, National Ports Council, Directorate of the Merchant Marine and the National Ports Department. Also, the General Directorate of Maritime Development (DIRDEM) was put in charge of maritime development. It is the Directorate of the Merchant Marine (DIMEREC), which carries out port policies established by the National Ports Council.

The Port of Guayaquil expansion will include three deepwater berths (5 existing), three transit sheds, one container stuffing shed, workshops, one bulk terminal and technical assistance to help manage port operations.

The estimated cost is US\$84 million, of which approximately \$50 million will be financed by the World Bank. Construction will begin in 1976. A master plan is also planned, which would put a deepwater port for large vessels at Data or Posorja.

Expansion of the Port of Esmeraldas is also underway with the addition of docks, dykes, sheds, warehouses and customs buildings. Furthermore, the Ecuadorean state petroleum company, CEPE, is considering constructing a large maritime terminal at Esmeraldas to handle the products from the new refinery being built there.

The Port Authority of Puerto Bolivar is undertaking the construction of a marginal pier with two berths, at the side of the existing spur dyke. It should have 360 meters length and 26 meters width, a concrete platform, mounted on reinforced concrete piles. Work at Bolivar will include deep dredging to a depth of ten meters, construction of paved yards for freight storage, and a transit freight warehouse of 120 by 40 meters with concrete walls and asbestos cement roofing. Further improvements on this port include 800 meters of concreted access ways, a water tank and power supplies.

At Manta a BHF communication equipment with up to 60 miles range will be installed. Conveying systems and port communications will be improved.

The fishing ports of Manta and Posorja are also being extended.

Concurrent with the above developments and extensions will be the need to purchase modern cargo handling and general port equipment.

COSTA RICAGeneral Information

Area	- 19,653 sq.miles
Population	- 1,811,000
Imports	- Chemicals and chemical products, machinery, transport apparatus, paper, textiles, crude materials and fuels
Exports	- Sugar, coffee, bananas, meat and some chemical products
Trading Partners	U.S.A., Germany, Japan and Central America

Economy

Costa Rica's economy is strongly agricultural based and depends primarily on four products: bananas, coffee, sugar and cattle. Agriculture accounts for one-fifth of the Gross Domestic Product, over 75% of export earnings and over 40% of employment.

The manufacturing sector is growing slowly. Recently, in an effort to improve this rate of growth, Costa Rica has sought to attract increased foreign investment. Currently, the mining sector is enjoying considerable activity. A number of gold mines controlled mainly by the U.S. and Canadian companies are being exploited. As well, a number of companies are actively exploring for copper deposits in the Talamanca region.

Costa Rica, although a small country possesses many potential hydroelectric sites. With financing from the IBRD and IABD the development of these sites is underway.

Port and Harbour Development

The principal port on the Pacific side is Puntarenas. A new port, Caldera is being constructed with low-cost Japanese financing to be capable of handling 600,000 tons by 1979. In addition, on the Pacific coast Punto Morales has recently been inaugurated to relieve the congestion at Puntarenas. At present Punto Morales with one pier, is moving 600 tons of grains per hour. The Costa Rican Government recently received a \$9.5 million loan from IABD for construction of a fishing port complete with terminal, processing plant, freezing facilities and equipment for processing shrimps and prawns to be located at Puntarenas.

On the Atlantic coast the principal port is Limon. The West German Government recently financed the construction of a breakwater and the Government now has plans to expand this port by constructing a new pier for the exportation of bananas and importation of petroleum products.

Plans also call for construction at Limon of two berths of 520,000 tons capacity each. Part of this project will be financed by the German Government through a credit of three years of grace, ten years free payment at an interest rate of 2½ percent. Construction time is estimated at 2½ years. Prequalification of contractors has just been completed and it is expected that the construction contract will be awarded by the end of 1976.

No further port or harbour development information is available at this time.

NICARAGUAGeneral Information

Area	- 57,143 sq. miles
Population	- 1,783,000
Imports	- Machinery and transportation equipment, manufactured goods, chemicals, food products, crude materials and fuels
Exports	- Cotton, oilseeds, coffee and meat
Trade Partners	- U.S.A., Japan, F.R.G., El Salvador and Costa Rica

Economy

Nicaragua's economy is traditionally agricultural although mining is important and, on a smaller scale, manufacturing is expanding under the impact of modern techniques and methods. Most of the mining exploitation has been undertaken by the U.S. and Canadian companies. In 1973 and following recommendations by IBRD, a strong stimulant was given to the nation's economy through creation of a National Development Institute.

Sixty five per cent of the nation's working population is engaged in farming which accounts for 37% of GNP. The country's two most important export items are cotton and coffee. In seeking diversification and expansion of crops, the Nicaraguan Government adopted import duty concessions on agricultural machinery, crop fertilizers and insecticides; at the same time it increased loan subsidiaries for cotton production and elimination of coffee export tax. Shortage of electrical power presents Nicaragua with one of its most critical problems. This situation has been alleviated through a \$9.1 million IBRD loan with the injection of U.S. technology. Feasibility studies are underway for geothermal as well as hydroelectric power projects.

Port and Harbour Development

The principal port is Corinto on the Pacific Coast. World Bank (IBRD) assistance amounting to \$11 million has been provided for shore protection works, for rail and road access, deepening of approach channels; a new 240 meter wharf, acquisition of container crane and straddle carrier, administration and service buildings and supported utilities.

The estimated project cost also includes engineer and staff training at a total cost of \$14.7 millions and the undisbursed amount at May 1975 was in the order of \$9 millions.

The Department of Navigations of the Ministry of Public Works and Transport is currently planning the improvement and expansion of a small port at Siuna and Rio Escondido on the Pacific side of the country. To date no financing has been allocated to this project and it is believed the client will seek turnkey offers including financing. The estimated value of this project is in the neighborhood of \$4-5 millions.

No further port or harbour development information is available at this time.

PANAMAGeneral Information

- Area - 29,200 sq miles
- Population - 1,800,000
- Imports - Machinery and Transportation equipment; manufactured goods, paper and paper products, fuels and lubricants; food products and raw materials
- Exports - Bananas, petroleum products, shrimp, sugar and meat products
- Trade Partners - U.S.A., Germany, Japan, and United Kingdom

Economy

Panama enjoys an open economy with low tariffs and taxes and freedom from exchange controls. Although Panama has an adverse balance of trade (mainly with the U.S.A.) due to the heavy import of consumer goods, the country is usually able to balance its budget and maintain a relatively high standard of living because of revenues from the Canal.

About 30% of the country is in agricultural use; of this, one-half is under cultivation, the remainder is natural or artificial pasture. Main food crops are rice, maize, coffee, citrus, sugar and coconuts. Livestock raising has increased considerably in recent years. The country possesses timber resources, particularly mahogany.

Local industries include food and drink processing, clothing, cigarettes, soap, construction and building materials, paper, and cement. There is an oil refinery in Colon. Power generating capacity in Panama, outside the Canal Zone is about 172 megawatts.

Government development plans call for the exploitation of existing hydroelectric resources. The IBRD has provided \$42 million financing for the Bayano project and financing is being sought from bilateral sources for the \$45 million La Estrella-Los Valles and \$110 million La Fortuna hydroelectric projects. In addition, the Panamanian Government is currently negotiating with Texas Gulf Sulphur of New York for the development and exploitation of the \$700-800 million Cerro Colorado copper project. The contract for the feasibility study has been signed and the study is to be completed by mid 1978.

Port and Harbour Development

The principal ports in Panama are in the Canal Zone at Balboa on the Pacific side and Cristobal on the Atlantic side. Both these ports are controlled by the U.S. Government-owned Panama Canal Company. To lessen the dependence on Canal Company ports, the Panamanian Government has contracted on a turnkey basis for a \$38 million container and general cargo port at Bahia Las Minas, near Colon on the Atlantic Coast. A Canadian consortium won the contract with financing being provided by EDC and several Canadian commercial banks. The Panamanian national port authority also obtained recently a \$24 million loan from IBRD for the construction at Punta Vacamonte, about 30 kilometers to the west of Panama City, of a fishing port with protective breakwater, dredged access channel, 10 berths for shrimp trawlers, 4 berths for tuna boats, quays for berthing inshore fishing vessels and for servicing trawlers, a ship-repair berth and yard buildings for shrimp processing, a tuna cold storage plant, a fish market, administrative offices and utility services.

No further port and harbour development information is available at this time.

CUBAGeneral Information

- Area - 44,218 sq. miles
- Population - 9.5 million
- Imports - a wide range of capital goods, raw materials foodstuffs and petroleum products
- Exports - sugar and its by-products, metals and minerals, tobacco and tobacco products, tropical fruits, fish and seafood products
- Trade Partners - U.S.S.R., Italy, Spain, Japan, U.K., France, F.R.G., Canada

Economy

Cuban economy is primarily agricultural and based on the sugar industry. Other important agricultural products are coffee, cocoa, cotton, tobacco, tropical fruits and livestock. Cuba also has extensive forests of valuable cabinet woods. Mining resources and mining industry are nationalized.

Minerals include iron ore, copper, manganese, chromite nickel, cobalt, gold and silver.

Other products which are nationalized include rayon, cement, petroleum products, rubber products, alcohol, cigarettes, fertilizers.

Cuba depends largely upon the Soviet Union and other communist countries for the greater proportion of its trade. It also trades with Colombia, Peru, Venezuela, Costa Rica, Panama, Mexico, Jamaica, Guyana and all OAS member including Argentina. Sugar and its by-products account for 90% of Cuban trade.

Canada's imports from Cuba include sugar, seafood, cigars and cigar tobacco. Canadian exports include flour, wheat, lumber, tallow, milk products, wood pulp, copper, construction material and other manufactured goods. Recent orders for locomotives and miscellaneous equipment are valued at upwards of \$30 millions.

Port and Harbour Development

Under the Ministry of Mercantile Marine and Ports, Cuban ports are controlled by 17 agencies. Plans for improvement and extensions

have been briefly outlined by the Ministry and are summarized below. The current reorganization of various ministries may reduce the number of agencies under the Ministry Merchant Marine and Ports.

Havana is a natural, landlocked, well-sheltered harbour and the principal port of the country. Major Cuban industries are located in the vicinity. A plan is being developed to complete a new terminal for the discharge of bulk cargoes such as fertilizers, coal and other minerals. Coupled with these improvements the Port Authority may plan to purchase modern cargo handling equipment. Work is presently underway in Havana on a container port with Soviet assistance.

Santiago de Cuba is located on the south coast and is the second and most important port of Cuba. The bay is sheltered and landlocked by high ground. Port Authorities have plans for repair and rebuilding its facilities. The port will be dredged docks and berthing stations reinforced with water load on directly to the dockside. It is likely that additional cargo handling equipment will be required.

The Port of Antilla is located on the north side of Nipe Bay on the north coast of Cuba. Among other improvements for accelerated cargo handling, it is planned to build a bulk raw sugar shipping plant.

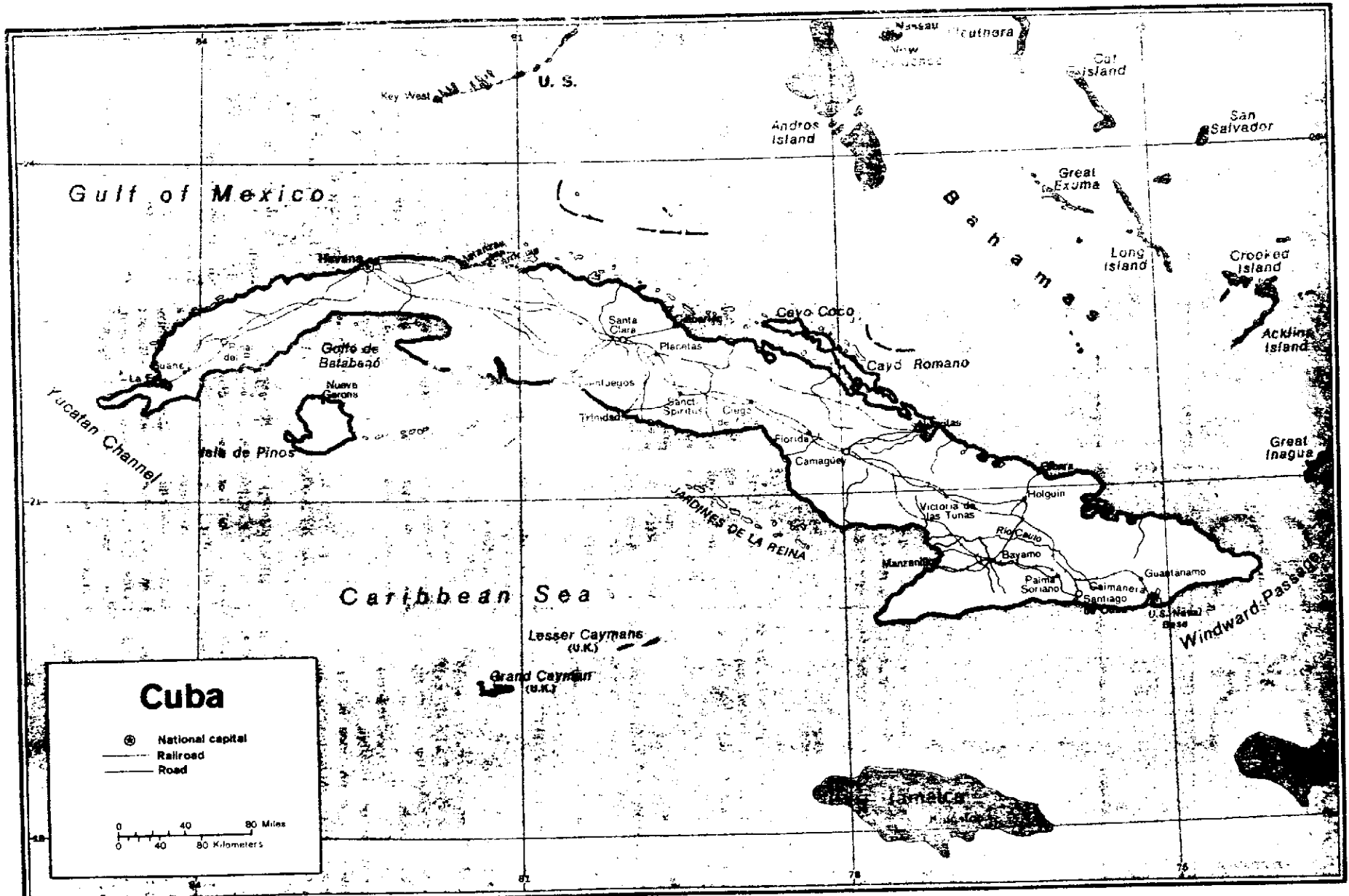
Cienfuegos on the south coast of Cuba is located in the middle of the most important and fertile sugar cane plantations in the central provinces. This port is becoming increasingly important with a good level of tourists in the city itself. There are plans to start new construction by building piers and other docking installations. The new cement plant at Guaos is under construction and this factory will increase cargo turnover. Cienfuegos has the largest bulk sugar handling facilities in Cuba and is also the main center for fertilizers. Nuevitas has become the major sugar exporting port with Cienfuegos.

Isabela De Sagua is primarily a sugar shipping port and is restricted by some narrow approaches. Plans are being developed to complete dredging of the port and approach channels.

The Port of Moa and its sub-port Punta Gorda are located on the north coast and mainly handle mineral imports and exports. A plan exists to enlarge the main port and pier so that at least two vessels may be loaded and unloaded at the same time.

Located on the south coast of Cuba, Puerto Padre is a safe and sheltered port situated on one of the richest sugar cane zones. Two of the largest and most modern sugar mills are in the vicinity.

Reasonably good rail and road communications extend to the sugar mills. At the present time new holding tanks for petroleum products are being built to increase port storage capacity. Plans exist for a water reservoir for direct water supply to vessels docked. Emphasis over the next five years for all ports will be on Cargo handling equipment and construction of warehousing facilities.



Cuba

- ⊙ National capital
- Railroad
- Road

0 40 80 Miles
0 40 80 Kilometers

GUATEMALAGeneral Information

- Area - 42,042 square miles
- Population - 5 million
- Imports - transport equipment, industrial machinery, chemical products, paper and paper products, plastics and consumer goods.
- Exports - coffee, cotton, sugar bananas and meat.
- Trade Partners - U.S.A., F.R.G., Japan, El Salvador

Economy

Agriculture is the most important industry in Guatemala which has a very fertile soil. Its chief crop is coffee and bananas, cotton, sugar, maize, rice, beans and wheat are also important products. To a lesser degree, wood products such as mahogany and shrimp fisheries contribute to export trade. Guatemalan industries are directed toward its domestic market and include clothing, textiles, foodstuffs and tobacco.

Guatemala is a member of CACOM and also of the Central American Commission of Port Authorities (COCAAP).

Port and Harbour Development

An accord of 1972 created the National Ports Commission which studies and develops policies to generate improved organisation and unification of Guatemalan national ports. COCAAP has proposed to United Nations a four million dollar project which it hopes will be in operation shortly. This project includes control of Maritime freights, port development and improvement and personnel training. The United Nations contribution is expected to be in the order of \$1.111 millions.

Guatemalan port improvement plans include installation of modern equipment for loading and unloading bulk products such as sugar, cotton seed, fertilizers, soya meal and wheat. The objective is to unload a 10,000 ton ship in 24 hours. Additional warehouse capacity is also planned.

Existing port installations will also be improved and expanded so that a total 450 meters of berthing space is available. This will mean additional yards for covered and uncovered storage. The capacity of the wharves will be increased with three additional berths for 10,000 ton ships of the Liberty type.

I.T.C. Contact - Commercial Counsellor in Guatemala City

HONDURASGeneral Information

- Area - 43,227 square miles
- Population - 2.5 millions
- Imports - manufactured goods, machinery, transport equipment, textiles and clothing, chemicals and food.
- Exports - bananas, coffee, wood, silver, lead, zinc, and cotton.
- Trade Partners - U.S.A., F.R.G., Guatemala.

Economy

In common with its Central American neighbors, agriculture and forestry forms the most important industry in Honduras. Chief crops are bananas and coffee. Hardwood products contribute to exports and in recent years mineral deposits have become increasingly important. Honduras is heavily dependent upon imports of machinery, road and rail equipment. It is a member of the Central American Commission of Port Authorities.

Port and Harbour Development

The National Harbours Agency is an autonomous public service body which has jurisdiction over all Honduran ports and harbours. The main port is Puerto Cortes on the North coast and it handles 2,000 medium and small size ships per year.

Proposed development at this port includes two deep-water berths and ancillary facilities; construction of railroad yard, roads and other services; procurement of a tug boat and pilot boat.

Because of increasing demands for hardwoods and agricultural products, a new port at Puerto Castilla is planned as well as improvements to other national port facilities. World Bank funds in the order of \$16 millions may be involved of which \$2.4 millions have already been disbursed.

I.T.C. Contact - Commercial Counsellor in Guatemala City.

INDIAGeneral Information

Area:	1,262,000 sq. miles
Population:	520 millions
Imports:	Manufactured goods, machinery, transport equipment, food products, petroleum products, textile fibres.
Exports:	Textile goods, tea, crude minerals including iron ore, sugar, jute products.
Trade Partners:	USA, UK, USSR, FRG, Japan and Canada.

Economy

India traditionally is an agricultural country although the introduction of intensive irrigational and educational programmes coupled with new farming techniques have benefited agriculture. However output does not keep pace with population growth. Principal crops are tea, rice, wheat, jute, cotton, sugar and peanuts.

For sometime India has had textile industries and many new basic industries such as steel, machine, tools, chemicals and fertilizers plants are coming into prominence. Mineral products include aluminum, iron and ferro alloys, steel ingots and some petroleum products.

Port and Harbour Development

Four major port projects are nearing completion at Visakhapatnam, Haldia, Mormugao and New Tuticorin.

Visakhapatnam will give India its deepest and most mechanized harbour with 16 metres draught and a modern ore loading plant with a capacity of 8,000 tonnes per hour. It will handle 100,000 dwt bulk vessels and future development anticipates 200,000 dwt ships with rates up to 16,000 tonnes per hour. This harbour is primarily for exporting iron ore to Japan and is estimated to cost \$110 millions.

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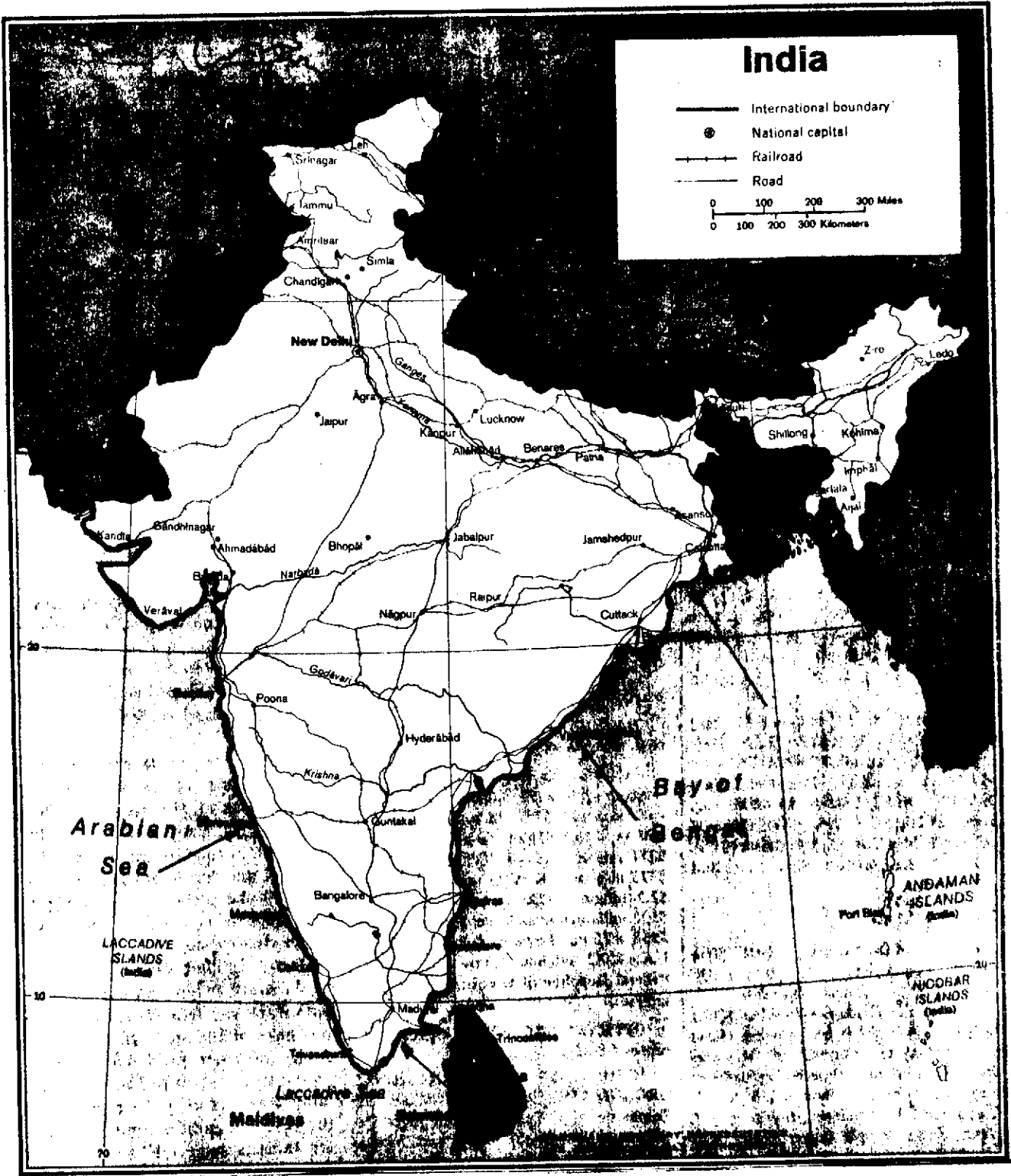
The Haldia deepwater dock is an adjunct to the development of Calcutta. New docks situated some 50 miles downstream are expected to be completed in 1976. Berths for iron ore, fertilizers, coal, salt, general cargo and containers are being constructed with a jetty to receive oil tankers. This project is expected to cost in the order of \$150 millions.

Mormugao suffers from low draughts and mechanical loading facilities are inadequate. These deficiencies will be relieved by intensive dredging and reclamation together with new oil berth taking carriers up to 60,000 dwt. A new mechanical loading plant will have a rated capacity of 8,000 tonnes per hour.

The fourth port project to be completed within the next year is Tuticorin where five new berths for coal, salt, cement, general cargo and oil will cater primarily to coastal trade.

Work on the Madras outer harbour scheme is expected to be completed in 1977. The new harbour will consist of an all oil berth and an ore berth with a capacity of 80,000 tonnes per hour. There is a proposal to deepen Madras harbour to 14.7 metres at a later date.

ITC Contact: Counsellor (Development and Commercial), New Delhi



INDONESIAGeneral Information

Area	- 575,450 sq. miles
Population	- 135,000,000
Imports	- cotton, wheat, rice, chemicals, machinery, transportation equipment, iron and steel products
Exports	- rubber, copra, pepper, cinnamon, tobacco, coffee, palm oil and tea; oil, lumber, tin
Trade Partners	- U.S.A., Japan, Netherlands, F.R.G. and China

Economy

Indonesia is a sovereign independent republic and possesses considerable economic development potential. It has large mineral resources in petroleum, bauxite, tin, iron ore, nickel and manganese. Main agricultural products include rice, corn, sugar, tea, coffee, rubber, tobacco, copra, pepper and cinnamon. Indonesia has large areas of fertile land which have not yet been agriculturally developed.

Industries are primarily textile and manufacturing, ship-building, automobile and bicycle assembly, paper products, tire building, glass manufacture and chemicals. A good percentage of the industry has been nationalized and is operating below capacity due to lack of skills.

Port and Harbour Development

Shipping and port and harbour development will continue to play an important part in the development of the Indonesian archipelago.

Each port is administered by an independent Port Authority with the title "Port Administer" ADPEL who is directly responsible to the Director-General of Sea Communications, Department of Communications. Port Authorities manage their own operation.

World Bank (IBRD) assistance for inter-island shipping at an estimated total cost of \$200 millions is planned. The World Bank portion will be in the order of \$60 millions.

Rehabilitation of the present inter-island fleet will also be financed through World Bank arrangements at an estimated cost of \$13.5 millions.

Swan Wooster has undertaken a study for PUSRI, (a fertilizer concern) related to special carrier ships, bulk handling terminals, bagging plants and storage facilities for Indonesian ports. IBRD funds are estimated at \$60 millions for the total project.

Swan Wooster has produced a study covering the long term development for the Port of Tanjung Priok (Jakarta) under a UNDP financed project the total cost for which will be \$13 millions. Swan Wooster is also designing port facilities for an EDC financed cement plant in South Sulawesi - value \$9.9 million. On the Island of Sumatra, the Ports of Belawan and Panjang are being studied and reports prepared by British consultants; planned financing is by the Asia Development Bank.

At Tanjung Priok mentioned above, a current project includes rehabilitation and expansion of this port through upgrading and widening of aprons and sheds, strengthening of breakwater, construction and improvement of roads, water supply, drainage, lighting and cargo handling equipment. The total cost of this project is \$8.5 millions of which ADB will provide \$5.3 millions. A cost overrun of \$2 millions is anticipated.

A similar project is being carried out at Surabaya (Tanjung Perak) and includes floating equipment and telecommunications at a total estimated cost of \$8 millions. Here also a cost overrun is expected.



IRANGeneral Information

- Area - 627,000 sq. miles
- Population - 27,080,000
- Imports - machinery and transport equipment, iron and steel, food and chemicals
- Exports - petroleum, carpets, cotton and fruit
- Trade Partners - Japan, U.K., U.S.A., F.R.G., France and Netherlands

Economy

As is well known, oil production and refining are the major sources of foreign exchange and revenue. Principal agricultural products are wheat, rice, barley, fruit and vegetables. Other industries include textile manufacturing, food processing, building materials and tires.

Rapidly growing oil revenues enable the Iranian Government to pursue an expansionary economic policy. Defence and security spending constituted more than half of the increase in current expenditures during the period 1967-1972 and have risen rapidly. Growth in oil revenues during this period did not increase public savings as much as might have been expected.

Employment in agriculture is declining whilst industrial employment increases. In 1962 one third of the population lived in urban areas and in 1972 this increased to almost fifty percent.

The Iranian Fifth Plan came into effect in 1973 with the objective of rapid modernization of the economy, improved education, better health and social facilities, faster growth of cities and regions outside Tehran and development of a basis for higher export of manufactured goods, non-oil minerals and petro-chemicals.

The thrust of World Bank assistance for Iran over the next two or three years will give special emphasis to balanced regional development, diversification of the economy toward an industrial and modern society. Bank activities will concentrate on agriculture, education, urbanization and to a lesser extent on industry and mining.

Port and Harbour Development

Main Iranian ports are Khorramshahr, Bandar Shahpour, Bandar Abbas, Bushehr, and Bandar Pahlavi (Caspian Sea). In general terms expansion programs will focus on the Ports of Bandar Shahpour, Bandar Abbas and Bushehr with new ports near Chahbahar and Bandar Abbas. Khorramshahr has been overloaded over the

past ten years and the plan is to reduce dependability on that particular port. In tandem with port improvements and extensions, modern handling equipment of all types will be required.

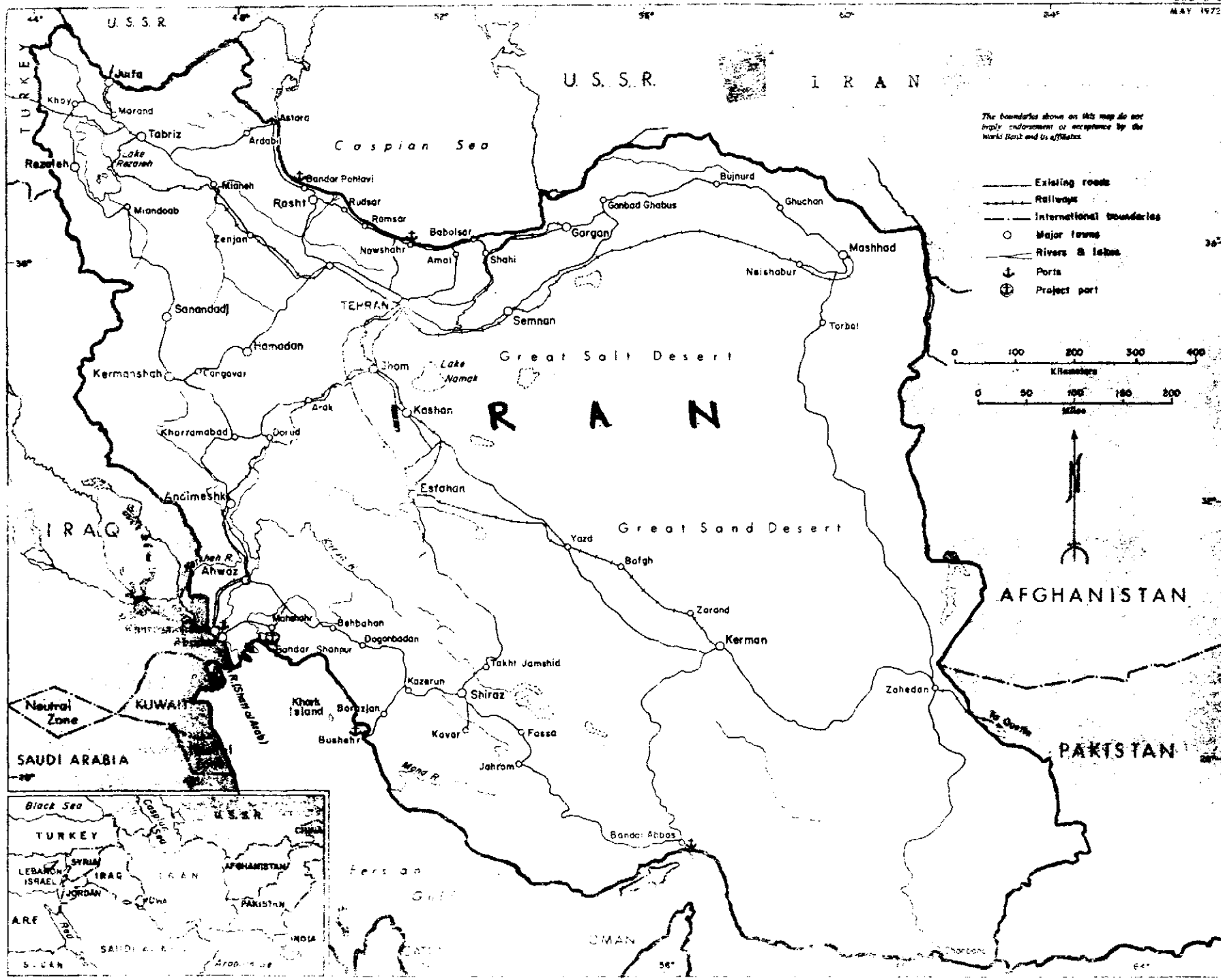
Current port improvements at Bandar Shahpour include construction of four new berths, cargo handling and floating equipment, a master plan study for Iranian ports and technical assistance and training at a total estimated cost of \$42 millions. World Bank (IBRD) funds amounting to \$29 millions are being provided and the undisbursed amount is \$20 millions.

The second phase of port improvement at Bandar Shahpour includes construction of ten additional berths, transit sheds and warehouses, port administration buildings and workshops, purchase of fork-lifts, tractors, trailers, mobile cranes and container cranes, purchase of harbour craft and provision of technical assistance on all aspects of port administration and operation. The total cost of this project is estimated at \$160 millions and it is scheduled for completion in early 1980. IBRD funds amount to \$65 millions.

The port project is based on a report prepared by Adibi-Harris (Iran/U.S.A.) and feasibility studies by Iran-Kempsax Consultants (Iran/Denmark). Iran-Kempsax have been engaged for completion of detailed engineering, preparation of tender documents and supervision of construction work.

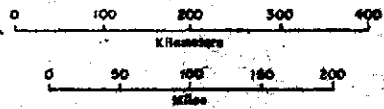
Connected indirectly to port and harbour development is a World Bank project which provides assistance to improve the exploitation of important fish and shrimp resources in the Persian Gulf and Oman Sea. This project provides credit facilities for commercial fisherman to purchase fishing vessels ranging from 50 tons to 1200 tons and ancilliary requirements. It also provides for establishment of two training centers. Procurement will be made through local advertising. Total project cost is estimated at \$18 millions and IBRD funds amounting to \$12.5 millions will be provided. No W.B. funds have been disbursed as at May 1975.

I.T.C. Contact - Commercial Counsellor Tehran, Iran



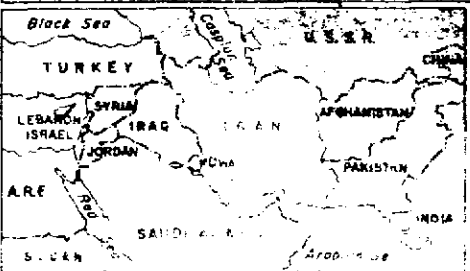
The boundaries shown on this map do not imply endorsement or acceptance by the World Bank and its affiliates.

- Existing roads
- Railways
- - - International boundaries
- Major towns
- Rivers & lakes
- ⚓ Ports
- ⊕ Project port



AFGHANISTAN

PAKISTAN



ISRAELGeneral Information

Area	- 7,993 sq. miles
Population	- 2,820,000
Imports	- manufactured goods, machinery, crude materials and fuels, food and chemicals
Exports	- manufactured goods, cut diamonds, textiles, clothing, food chemicals, grapes
Trade Partners	- U.S.A., U.K., F.R.G., Netherlands, Switzerland and Belg./Lux.

Economy

Despite considerable handicaps of limited natural resources and the need to train many thousands of immigrants, Israel's sustained economic growth over the last two decades has been remarkable. Much of the country's income has, of necessity, been directed to its defence efforts. Since the establishment of the State, central planning and government intervention have characterized Israel's economy together with emphasis on physical development, maintenance of full employment and provision of high level of services.

Agriculture provides most of the country's food need and employs more than twelve percent of the labor force. It is responsible for ten percent of the national product. Industry employs over one quarter of the working population and food industries are the largest; electronics and aviation capabilities are expanding rapidly. The major enterprises after food products are textiles, machines, metal products, chemicals and petroleum, diamonds, wood products and transport equipment. Most of the industrial plants employ less than 100 workers. Israel's fuel resources are limited and it has no important source of hydro-electric power.

Port and Harbour Development

Israel's main ports are Haifa and Ashdod on the Mediterranean and Eilat on the Gulf of Aquaba. Israel's Transport Ministry has approved a five year port investment program at an estimated cost of \$216 million. Half of this sum will be spent on container terminals and the balance on warehouses, storage installations and equipment replacement.

During fiscal 1974-75 traffic at the three main ports increased by fourteen percent and imports, which accounted for 6.3 million tons, recorded a ten percent gain from the previous year. Exports were up more than nineteen percent on 1973-74 levels. The Israeli Ports Authority has asked that steps be taken to ensure that the Eilat is not harmed by the re-opening of the Suez Canal. IPA has recommended that the Israeli Government force-feed Eilat by building a railway from the port to the Mediterranean and thereby reinforcing the Eilat-Ashdod landbridge.

At Haifa Port, development in the Kishon Area will include a new berth and reconstruction and deepening of the Southern wharf, an upland container distribution centre, further expansion of the bulk chemicals terminal, additional storage space, construction of a new passenger terminal and transit sheds and a central container terminal in the Eastern part of the port.

At Ashdod Port construction will continue on container berths, a wharf at the main breakwater and development of the Port's hinterland, construction of new buildings and renovation of existing structures.

At the Port of Eilat improvements will include planning for a container terminal, expansion and reconditioning of present installations, erection of transit sheds and development of the Port's hinterland.

IVORY COASTGeneral Information

- Area - 124,300 sq.miles
- Population - 6 million
- Imports - petroleum products, hardwood and electrical goods, cement, iron and manufactured articles, rice and cereals
- Exports - hardwoods, coffee and cocoa, machined timber, bananas and fruit
- Trade Partners - France, U.S.A., F.R.G., Italy and Netherlands

Economy

Ivory Coast was formerly a territory of French West Africa and became an independent republic in 1960. Traditionally the country has benefited through a modest introduction of French technology. The present trend seems to be one of loosening strong French ties and to examine other countries (e.g. recent trade delegation to Canada) in terms of mutual trade arrangements and cooperation. Ivory Coast principal products are hardwoods, miscellaneous cereal and agricultural products such as sweet potatoes and rice. Mineral deposits of manganese and diamonds may become increasingly important.

Port and Harbour Development

In 1974, the Port of Abidjan handled 6.6 million tons of cargo, which decreased to 6 million tons in 1975. With the port of San Pedro total traffic on the Ivory Coast was 7.4 million tons in 1974 and 7 million tons in 1975.

In Abidjan, the number of berths has been increased to 22 and the construction of two new berths will start in the near future. Improvements to the port include, among others, roll-on roll-off facilities.

San Pedro is a deep water port with six mooring berths and three quays for miscellaneous cargo. The basic plan provides for an additional 12 berths and 4 moorings to handle cargoes projected at 2 million tons annually. Additionally facilities for fishing trawlers and fish handling together with a mineral wharf and a marine upland at an estimated cost of \$1.6 million. Plans are in existence for the development of an industrial zone at San Pedro. It follows that, in common with Abidjan, modern cranes and cargo handling equipment will be required.

ITC Contact - Commercial Secretary in Abidjan, Ivory Coast

GAMBIAGeneral Information

- Area - 3,977 sq. miles
- Population - 343,000
- Imports - manufactured goods, textiles and clothing, machinery, transport equipment, food
- Exports - ground nuts, ground nut oil and fodder (derived from ground nuts)
- Trade Partners - U.K., Italy, Japan, Portugal and Netherlands

Economy

A former British colony, Gambia attained full internal self-government in 1963 and is an independent member of the Commonwealth. Most of the population is engaged in agriculture and particularly cultivation of ground nuts. Fishing and livestock production are considerable. Ground nut processing remains the principal industry and no minerals at present are being exploited.

Port and Harbour Development

Under World Bank arrangement (IDA) the Port of Bathurst is undergoing improvements which include rehabilitation of existing wharf, construction of new deep water wharf and furnished with two transit sheds, and building a new jetty for shallow draft vessels. Supporting facilities to be provided include a small dredger, cargo-handling equipment and navigational aids. The total cost of this project is \$2.4 millions and IDA financing amounts to \$2.1 millions. All procurement contracts under the loan have been awarded. No information concerning further port or harbour development is available at this time.

I.T.C. Contact - Commercial Secretary in Abidjan, Ivory Coast

GUINEAGeneral Information

- Area - 95,000 sq. miles
- Population - 3.7 millions
- Imports - cotton textiles, rice, vehicles, cement, machinery, petroleum products and sugar.
- Exports - alumina, coffee, bananas, palm kernels, iron ore, bauxite, diamonds and pineapples.
- Trade Partners - U.S.A., U.S.S.R., China, E.E.C., Norway

Economy

Formerly the colony of French Guinea which elected to leave the French West African Community in 1958 and became an independent republic. Links with France were severed and French financial and technical aid replaced by U.S.A., F.R.G., U.S.S.R. and Chinese assistance. Guinea's population is primarily dependent on agriculture. Guinea possesses one-third of the worlds known bauxite reserves and other minerals include iron ore, gold and diamonds. It has an extensive potential for hydro electric power and its industries include aluminum products, vehicle assembly and consumer goods. Trade between Guinea, U.S.S.R. and China is quite significant but no statistics are available.

Port and Harbour Development

The principal port is Conakry which in 1968 handled 1.4 million tons of cargo. Secondary ports include Benty, Boké, Boffa, Kansa and Victoria. It is possible that plans to extend Conakry may develop, particularly if iron ore deposits in the hinterland are extensively exploited.

A World Bank loan in the order of \$9 millions was signed in 1971 for the extension of mining facilities at Boké and a waiting basin at the Port of Kansa. These funds included extensions to railway systems, the port town site and hospital. All funds have now been disbursed.

I.T.C. Contact - Commercial Secretary in Abidjan, Ivory Coast

LIBERIAGeneral Information

- Area - 43,000 sq. miles
- Population - 1.1 millions
- Imports - miscellaneous manufactured goods, machinery, transport equipment and food.
- Exports - iron ore, rubber and diamonds.
- Trade Partners - U.S.A., F.R.G., U.K., Netherlands and Japan

Economy

The greater percentage of the population of Liberia is engaged in agriculture and major food crops are rice, plantain, bananas and cassava. The country's major industry is rubber production; products of the manufacturing sector are processed rubber, soap, cement, construction materials, textiles, foodstuffs, furniture, palm oil and aluminum. High grade iron ore and diamonds are produced and Liberia has unexploited reserves of manganese, columbite, tantalite and bauxite.

Port and Harbour Development

The main Liberian port is Monrovia. Out of a total of 20 million tons of maritime traffic in 1969, Monrovia handled more than 10 million. Other ports are Buchanan, Greenville and Hasper.

In mid-1969 IBRD approved a loan of \$3.6 millions for the enlargement of Monrovia. No further planning information is available. Funds not disbursed for this project and in the order of \$170,000 may be used for a general study of Liberian port requirements.

I.T.C. Contact - Commercial Secretary in Abidjan, Ivory Coast

MAURITANIAGeneral Information

Area	- 419,232 sq. miles
Population	- 1.050 millions
Imports	- manufactured goods, machinery, transport equipment and parts, food products and petroleum products.
Exports	- iron ore, fish and gum arabic
Trade Partners	- France, U.K., F.R.G., U.S.A. and Italy

Economy

Mauritania, formerly a member state of French West Africa became an independent republic in 1960. The country's economy depends mainly on exploitation of heavy deposits of iron ore. Output is increasing and is supported by large investments from France and other E.E.C. countries. The bulk of the population is engaged in animal and agricultural sectors. Balance of trade figures are very favourable.

Port and Harbour Development

Principal ports are Port-Etienne (Nouadhibou), Point-Central and Nouakchott.

In 1973 Mauritania experienced a traffic growth of 47 percent greater than that in 1972. Fairly extensive improvements are to be financed by IBRD at an estimated cost of \$1.6 millions.

At the fishing port of Nouadhibou improvements include dredging to a depth of six meters and development of adjacent areas; extension of customs enclosure, water supply system and other essential services.

The commercial port of Nouakchott will be improved by an extension to the mole, demolition of present bridge and construction of a new two hundred meter bridge which will give access to the wharf.

I.T.C. Contact - Commercial Secretary in Abidjan, Ivory Coast

SENEGALGeneral Information

Area	- 76,124 sq. miles
Population	- 3.670 millions
Imports	- cereals, sugar and foodstuffs, petrol and cotton, machinery and vehicles
Exports	- ground nuts (including oil and cake), phosphates, fish, skins and hides
Trade Partners	- France, F.R.G., U.S.A., and U.K.

Economy

Formerly a state of French West Africa, Senegal became an independent republic in 1960. Its economy is largely dependent upon ground nuts and associated by-products production. The phosphate deposits are fairly extensive and mineral exploitation is increasing.

Port and Harbour Development

Dakar is the principal port and Kaolack, Saint-Louis and Ziguinchor are of lesser importance. Dakar handled approximately 5 million tons of cargo in 1970.

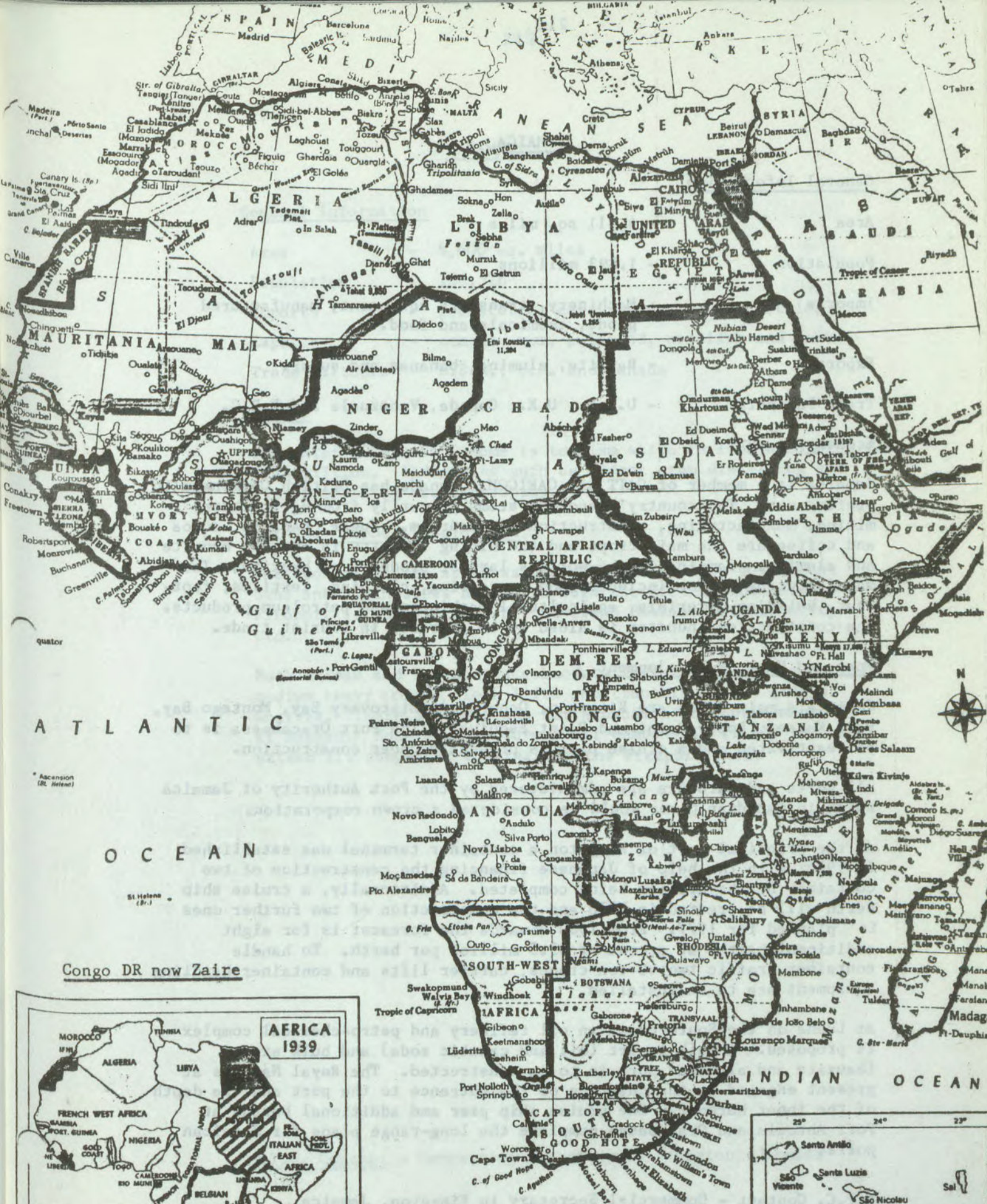
Port Authorities have produced an ambitious five year plan (1973-1977) for development and improvement of Dakar facilities. The plan includes construction of container facilities, roll-on roll-off berths, extensive dredging, mole construction, allocation of additional areas for fish processing and construction of dry docks for repair and servicing of large freighters.

World Bank (IBRD) funds up to \$30 million may be involved to construct dry dock and repair facilities for ships up to 500,000 d.w.t. Studies are now being reviewed by World Bank authorities.

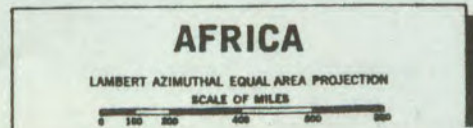
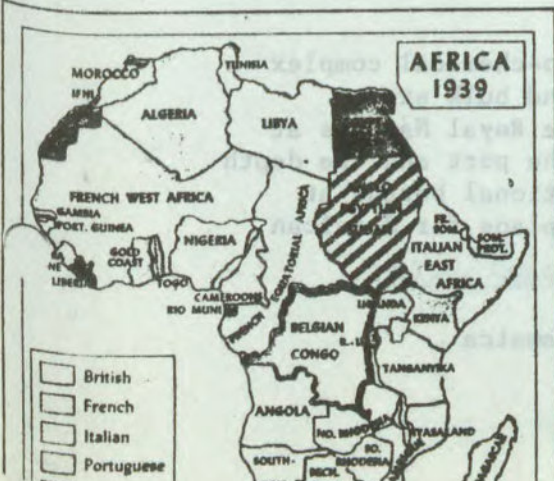
World Bank funds in the order of \$6 million may be involved in extending fishing, wharf and processing facilities at Dakar. Revised engineering and preparation of economic studies may be necessary.

Situated on the extreme Western bulge of Africa and adjacent to principal maritime trade routes, dry-docking and repair facilities at Dakar for large cargo vessels and tankers could develop into permanent and lucrative business for Senegal. Much would depend upon management and trade skills which are essential to fast turn-around time.

I.T.C. Contact - Commercial Secretary in Abidjan, Ivory Coast



Congo DR now Zaire



JAMAICAGeneral Information

Area	- 4,411 sq. miles
Population	- 1.893 millions
Imports	- Machinery, transport equipment, manufactured goods, chemicals and food.
Exports	- Bauxite, alumina, bananas and sugar.
Trade Partners	- U.S.A., U.K., Canada, Venézuella and F.R.C.

Economy

Jamaica is a member of GATT and CARICOM. Canada has British Commonwealth preferences. The country's economy stems primarily from agriculture, mining, manufacturing, construction and tourism. Sugar, bananas, cocoa and coffee are the main crops and the mining industry is largely bauxite and alumina. Jamaica is the world's largest producer of bauxite. The manufacturing sector includes food processing, clothing, textiles, footwear, building materials, agricultural machinery and petroleum products. The construction industry is aided by an increase in tourist trade.

Port and Harbour Development

Jamaica's main ports are Kingston, Ocho Rios, Discovery Bay, Montego Bay, Port Kaiser, Rocky Point and Point Esquivel. The Port Oracabessa is to be reactivated and a cruise pier is presently under construction.

All ports and harbours are administered by the Port Authority of Jamaica which in Canadian terms would be considered a crown corporation.

At the principal port of Kingston a container terminal was established in 1975; with the help of Japanese financing the construction of two container berths are now being completed. Additionally, a cruise ship berth will be erected in 1976 and the construction of two further ones is planned for 1977. From 1980 onwards the forecast is for eight additional berths at a cost of \$3.5 million per berth. To handle container traffic two 40-ton cranes, carrier lifts and container handling equipment are to be installed.

At Luana on the South coast an oil refinery and petro-chemical complex is proposed. A bulk import (oil and caustic soda) and bulk export (bauxite and alumina) port is to be constructed. The Royal Navy is at present engaged in the charting of the entrance to the port and the depth of the inner harbour. One cruise ship pier and additional berths at Port Antonia and Oracabessa complete the long-range plans for Jamaican ports.

I.T.C. Contact - Commercial Secretary in Kingston, Jamaica.

BAHAMASGeneral Information

- Area - 4,400 sq. miles
- Population - 165,516
- Imports - foodstuffs, cars, hardware and clothing
- Exports - cement, rum, pulpwood, crawfish and salt
- Trade Partners - U.S.A., U.K. and Canada

Economy

The chief source of income is tourism which in 1968 accounted for \$125 million. Industries such as cement, rum distilling and fish processing are developing.

Port and Harbour Development

The two main ports are Nassau and Freeport. The government owns and administers Nassau through the Port Department. Freeport is administered by the Grand Bahama Port Authority Ltd.

Both Nassau and Freeport accommodate large cruise ships, having medium heavy cranes, fork lifts and tractors at the general wharves. There are no plans for expansion or improvement at Nassau. However, the Burmah Oil Company is likely to extend its deepwater terminal in the Freeport area.

I.T.C. Contact - Commercial Secretary in Kingston, Jamaica

BELIZEGeneral Information

Area	- 8,867 sq. miles
Population	- 113,000
Imports	- Manufactured goods, food and chemicals.
Exports	- Sugar, fruit, materials and wood.
Trade Partners	- U.K., U.S.A., Canada, Jamaica and Mexico.

Economy

The Belize economy is dependent primarily on agricultural, fishing and forestry products. Its manufacturing industry is principally based on processing agricultural products.

Port and Harbour Development

The principal harbour is at Commerce Bight which handles 20 percent of Belize exports. Most vessels stand offshore for loading and unloading with cargoes handled by lighters and forklift vehicles at the wharf side. It is planned that a new wharf will be built here.

A major deep-water port is projected for Belize City; dredging, roll-on/roll-off berths, warehousing facilities and the construction of general cargo accommodation are called for in the master plan. In June, 1975, a U.S. consultant firm was selected to undertake the above plans.

CAYMAN ISLANDSGeneral Information

Area	-	100 sq. miles
Population	-	9,000
Imports	-	foodstuff, textiles, building materials
Exports	-	rope, shark skins and turtles
Trade Partners	-	U.K. and North America

Economy

The economy is based principally upon shipping, fishing and rope making. Tourism has developed recently.

Port and Harbour Development

The only major port is Georgetown, Grand Cayman and all facilities are owned by the government. It is proposed to establish a Port Authority.

At the present time passenger cruise ships anchor offshore and it is proposed to increase the number of berths and the harbour draft to 28 feet. Other improvements will include a 35 ton and six 2½ ton forklift trucks.

A Caribbean Development Bank loan amounting to \$2.5 million has been obtained to finance port extensions, buildings and other essential facilities.

I.T.C. Contact - Commercial Secretary in Kingston, Jamaica

K E N Y AGeneral Information

- Area: - 224,960 sq. miles
- Population: - 13 million (1974) growing at rate of 3.3% p.a.
- Major Imports - 1975 - Industrial supplies (non food), fuels and lubricants, machinery, transport equipment, consumer goods, food and drink.
- Major Exports: - 1975 - Coffee, petroleum products, tea, sisal, hides and skins, cement, meat, pyrethrum, canned preparations.
- Trade Partners: - U.K., West Germany, USA, Uganda, Tanzania and Iran (petroleum).

Economy

Formerly a British colony, Kenya gained independence in 1963. It has pursued a non aligned course on the international scene, and encouraged the ground of a free enterprise economy with substantial government involvement and direction. Kenya is the recipient of substantial development assistance from the developed World, the World Bank, U.K., USA, Canada, Sweden, West Germany, and the Netherlands are major donors. Agriculture accounts for about 30% of GDP and employs the bulk of the population. Manufacturing and construction and the tourist trade represents other major sectors of the economy. Tourism is estimated to be the second largest earner of foreign exchange. Mineral production is limited to soda ash and flourospar. The U.K. is gradually losing its position as the principal supplier of imports.

Port and Harbour Development

Kenya is one of the three members of the East African Community, which operates the Railways, Harbours, Post and Telecommunications and air services within Kenya, Tanzania and Uganda. The East African Harbours Corporation (EAHC) is headquartered in Dar-es-Salaam, Tanzania. It is expected that the EAHC will be decentralized in the near future, along with the other corporations with each region running its own affairs.

The port of Mombasa in addition to serving Kenya also serves Uganda, and to a limited extent Rwanda, Burundi and eastern Zaire. The flow of Zambian traffic was resumed early in 1976 after a year's break and there are indications that southern Sudan is likely to make more use of the port facilities at Mombasa.

- 2 -

The volume of total volume handled fell by 9% in 1975 due mainly to the world economic recession and the tightened import controls imposed by the governments of Kenya and Uganda. The diversion of Zambian transit trade and a drop in the number of ships calling at Mombasa with the reopening of the Suez Canal were also contributing factors.

Notwithstanding the decline in traffic, significant progress was made in the programme for the development of port facilities in 1975. The construction of two additional berths was virtually completed in 1975, and further handling equipment purchased, including one mobile crane, 12 portal cranes, 118 tractors, 17 lighters and 231 forklift trucks. In addition, 4 new pontoons, 6 mooring boats, and new tug were commissioned during the year. The work on the construction of new services area is rapidly nearing completion, and additional navigational aids were also installed during the year.

The Mombasa port modernization was part of an overall E.A.H.C. plan forecast to cost \$71 million, which is made up of World Bank funds \$26.5 million, EAHC to provide \$17.9 million and CIDA \$26 million to finance the foreign cost of equipment and floating craft.

Because of the difficulty of procuring some equipment in Canada, e.g. berthing tugs, CIDA went to the open market to purchase certain equipment. Canron supplied the portal cranes, and Allis-Chalmers the forklift trucks.

There have been some press reports of the investigation of the feasibility of establishing a second major port for Kenya, north of Mombasa at Kilifi, Malindi or Lamu. However, the fall in cargo tonnage handled by Mombasa has decreased the need for such a study.

The Lake Victoria railcar transport running between Entebbe/Uganda Mwanza/Tanzania and Kisumu, Kenya, has been suspended by the East African Railways Corporation in recent years, but will likely be reactivated in the near future.

ETHIOPIAGeneral Information

- Area: - 395,000 sq. miles
- Population: - 26 million
- Imports: - Machinery and transport equipment, textile yarns and fabrics, foodstuffs.
- Exports: - Coffee, hides and skins, oilseeds
- Trade Partners: - U.S.A., Italy, FRG, UK, and France

Economy.

Ethiopia's economy is mainly agricultural and, with livestock raising, accounts for 64 percent of its GNP and 95 percent of export earnings. Major agricultural exports are coffee, hides and skins, meat and pulses. Textile manufacturing is the largest industry with food processing second. Ethiopia has, on a per capita basis, been the recipient of very little overseas assistance. However, the World Bank has shown considerable interest in expanding its role since the 1974 revolution.

Port and Harbour Development

The large ports in Ethiopia are Assab and Massawa. Djibouti in French territories of Afars and Isaas, which is linked with Addis Ababa by rail, continues to be the major port for Ethiopia.

In the 1972-73 development plan investment of E\$28 millions was included for water transport. No funds were set aside for port and harbour development and, in terms of the U.N. summary of Industrial Development Plans, port development in Ethiopia does not feature as a priority item.

ITC Contact - Commercial Counsellor in Nairobi, Kenya.

SOMALI REPUBLICGeneral Information

- Area: - 246,135 sq. miles
- Population: - 2.7 millions
- Imports: - Manufactured goods, food, crude materials and chemicals and vegetable oils.
- Exports: - Bananas, plantains, livestock, hides, skins, and wood charcoal.
- Major Trade Partners: - Italy, Arabian States, USSR.

Economy

Somalia is an extremely poor country with its economy based on agriculture. 75 percent of the population are Nomads. Principal exports are livestock and bananas. The most productive area is served by the inadequate Port of Mogadiscio which is the capital and major import port. Somalia was formerly Italian Somaliland and was united with British Somaliland to form the Republic in 1960. Somalia has now based its economic policies on "Scientific Socialism". It is possible that the oil-wealthy members of Arab League will continue to provide funds and the emphasis is on exporting high quality finished animal products.

Port and Harbour Development

Modern port facilities have recently been provided at Berbera on the North coast (Gulf of Aden) by USSR and at Chisimaio in the south by U.S. aid. The capital and port of Mogadiscio is now undergoing extensive modernization and improvement under World Bank assistance at a cost in the order of \$25 millions; more than 80 percent is foreign currency.

Improvements at Mogadiscio include extension of breakwater and the construction of a new port to replace lighterage facilities; it includes four berths, livestock loading facilities, port operating equipment and technical assistance. This undertaking for the Somali Ports Authority is being supervised by Societe Grenobloise d'Etudes and d'Applications Hydrauliques (SOGREAH). Undisbursed amount is \$9.4 millions.

ITC Contact - Commercial Counsellor in Nairobi, Kenya.

TANZANIAGeneral Information

- Area: - 363,000 sq. miles
- Population: - 14,000,000
- Major Imports: - Food grains, crude petroleum, pharmaceuticals, chemicals, metals and manufactures thereof, machinery, transport equipment.
- Exports: - Coffee, cotton, sisal, cashewnuts, cloves, petroleum products, tea and diamonds.
- Major Trade Partners: U.K., Peoples' Republic of China, West Germany, - Iran (petroleum), Japan, U.S.A.

Economy

Tanganyika, a former German colony and League of Nations/UN mandate territory administered by the UN achieved independence in 1961. In 1964 Tanganyika united with Zanzibar to form the United Republic of Tanzania. However, since that time, Zanzibar has retained many of the aspects of an independent state including holding its own foreign reserves, which are considerable. Tanzania is a one party socialist state headed by an elected President, Julius Nyerere, one of Africa's leading statesmen. Its economy, based on agriculture, has suffered serious setbacks in recent years due to unfavourable weather conditions. Its major agricultural crops are: cotton, coffee, sisal, cashewnuts and cloves (Zanzibar). Mining is mainly confined to diamonds, though important deposits of iron and coal are scheduled for early exploitation in South West Tanzania. Industry is primarily occupied with agricultural processing and import substitutions.

Ports and Harbour Development

Dar-es-Salaam is the major port of Tanzania, with lesser ports at Tanga, Zanzibar and Mtwara. All ports are under the jurisdiction of the East African Harbours Corporation, which is headquartered in Dar-es-Salaam. The Tanzania region, like the Kenya region, is highly decentralized and it is expected that the Dar-es-Salaam headquarters will only be concerned with the Tanzanian ports in the near future. The Tanzanian ports of Dar-es-Salaam and Tanga have participated in the harbour modernization scheme, as mentioned in the Kenya section.

Dar-es-Salaam port has been congested in recent years due to the Zambian cargo re-routing exercise and the recent completion of the Tanzam Railway, which links Dar-es-Salaam with the Zambia railway system. Tanga serves northern Tanzania, and no great increase in traffic is expected. Mtwara handles the coastal area south of Dar-es-Salaam, however, it has no rail links and inadequate road connections with the rest of the country. Zanzibar handles traffic from Zanzibar and Pemba island.

The Lake Victoria boxcars transport service between Entebbe, Uganda; Mwanza, Tanzania and Kisumu, Kenya, has been suspended by the East African Railways Corporation in recent years, but will be reactivated in the future. Tanzania also runs like transport services on Lakes Tanganyika and Malawi (Nyasa).

ITC Contact:

Commercial Counsellor, Nairobi - Kenya

UGANDAGeneral Information

- Area: - 91,452 sq. miles
- Population: - 10,810,000 (1973) increasing by 3.3% p.a.
- Major Imports: - Foodstuffs, petroleum products, chemicals, manufactured goods, machinery and transport equipment.
- Exports: - Coffee, cotton and tea.

Economy

Uganda achieved independence from Britain in 1962, and is a Republic within the Commonwealth. The economy of Uganda is based on agriculture, with coffee, cotton, tea, sugar and livestock being the major agricultural products. There are some exportable hardwoods, and exploited minerals include copper and cement. Manufacturing consists mainly of agricultural processing and import substitution. The Uganda economy has declined since 1972 when the Asian community was expelled. Manufacturing, transportation and construction are operating at a very low level. Major exports such as cotton, sugar, tobacco, textiles and copper have declined greatly. Uganda receives almost no foreign assistance other than military assistance from the USSR due largely to President Amin's erratic political and economic policies.

Ports and Harbour Development

Uganda's foreign trade is shipped through Mombasa, which is linked to Uganda by rail (see Kenya report for port developments).

The boxcar transport service operated by the East African Railway Corporation between Entebbe, Uganda; Mwanza, Tanzania and Kisumu, Kenya, has been suspended in recent years, but is expected to be reactivated in the near future.

ITC Contact: - Commercial Counsellor in Nairobi, Kenya

SEYCHELLESGeneral Information

- Area: - 107 sq. miles composed of 86 islands scattered over 150,000 sq. miles of western Indian Ocean.
- Population: - 57,000
- Imports: - Food/drink, petroleum products, machinery and transport equipment, and manufactured goods and articles.
- Major Exports: - Copra, Cinammon bark, tourism plays a large role in the economy of the country.
- Trade Partners: - U.K., South Africa, Japan, Singapore, Australia.

Economy

The Seychelles achieved independence from Britain on 28th June, 1976, as a republic within the Commonwealth. Its economy is based largely on tourism, fishing and agriculture. Tourism has grown rapidly since the opening of an international airport on Mahe island in 1971. The Seychelles has hopes of developing the large fishing resources in its territorial waters.

Ports and Harbours Development

The new deepwater quay at Port Victoria is capable of taking ocean-going vessels, and became fully operational in 1975 with the arrival of a tug. The government wishes to develop Port Victoria into an entrepot port for the Indian Ocean. A major expansion of the fishing port facilities may be proposed under fisheries development schemes.

ITC Contact: - Commercial Counsellor, Nairobi - Kenya

MADAGASCARGeneral Information

- Area: - 587,041 sq. kilometres
- Population: - 8.3 million 1974 estimate, growing at 2.5% p.a.
- Major Imports: - Crude petroleum, pharmaceuticals, chemicals, textiles, metals and metal products, transport equipment, machinery, foodstuffs
- Major Exports: - Coffee, cloves, vanilla, sugar, meat and meat products, petroleum products.
- Major Trade Partners: - France, U.K., Reunion, Malaysia, Japan, West Germany.

Economy

Madagascar or the Malagasy Republic gained independence from France in 1960, but retained very strong economic and political links with them until 1972. France is still the major supplier of imports, buyer of exports and provider of development and technical assistance and foreign investment. However, political relations have been strained in recent years. The economy is primarily agriculture with coffee, cloves, vanilla, sugar, cattle and rice being the major agricultural products. The Malagache people are a fusion of Malay settlers who came centuries ago and Africans who came from the African mainland. The culture of the central highlands has many similarities to South East Asia. Industry is underdeveloped, and primarily engaged in agricultural processing and import substitutions. The economy has been experiencing difficulties in recent years because of the deficit in rice production necessitating large imports and economic uncertainty arising out of political changes.

Port and Harbour Developments

The major port is Tamatave, which serves the capital, Tananarive, and the east central portion of the country.

Malagasy ports handled 869,500 tons of international traffic in 1965, a rather feeble tonnage considering the size of the island and the length of its coastline. The leading port, Tamatave, handled 54.4 percent of the international cargo and 43.7 percent of total port traffic. The top six ports together handled 83.3 percent of total port traffic in 1965. The major explanations for the relatively low tonnage handled in Malagasy ports are the underdevelopment of the economy and the character of the exports. Many export commodities have high value in relation to their bulk (coffee, vanilla, clove products, tobacco, essential oils, pepper, etc), and there are no bulk mineral exports such as have justified the expansion of many African ports.

Only Tamatave can be considered a modern port, though its facilities are not adequate for the present tonnages. Tamatave, Diego-Suarez and Tuléar are the only ports that have some kind of deep water quay; many ports are no more than poor lighterage harbours with no protection for ships at anchor and with minimal shore and floating installations. The east coast is noted for the absence of indentation (Antongil Bay is open to the prevailing winds); the west coast has other physical difficulties, particularly the silting of river mouths. Ironically, Madagascar has one of the finest harbours in the world at Diego-Suarez, but its value is greatly reduced by its location at the northern tip of the island and by its restricted hinterland.

Tamatave is the only complete and modern merchant port, and more than any other is a gateway for the island, not just for a region. In 1965 it handled 64.0 percent of Malagasy's imports, 35.6 percent of its exports and 23.4 percent of coastal traffic. This pattern reflects the importance of Tamatave as the gateway for the leading consuming area on the island - the highlands centred on Tananarive - and the use of Tamatave as one of the four main transshipment points for coastal traffic.

Majunga, on the west coast, is Madagascar's second-ranking port with a total traffic of 245,300 tons in 1965, about equally divided between overseas and coastal traffic. It has a well-protected harbour but no deepwater quays. Diego-Suarez, with one commercial deepwater quay (it is also a naval base), ranks third among Malagasy ports. Tuléar, the chief port for the south west has a safe anchorage and deep water berth of sorts in the form of a 1,280-m (1,400 yd) jetty ending in a small pier with alongside depths of 8.5 m (28 ft).

The dispersion of activity among sixteen ports means that available funds are stretched too far to permit adequate installations anywhere. Nine of the sixteen handle less than 50,000 tons annually, and fourteen handle less than 100,000 tons. Since a yearly rate of about 200,000 tons is usually needed to justify deepwater facilities, it is obvious that Madagascar cannot expect to see the construction of modern facilities in more than a few locations.

The 1974-1978 development plan envisions a renovation of the port facilities and the concentration of international trade on the major ports. A new port has been proposed in the Bay of Narinda, 140 kms north of Majunga.

SOUTH KOREAGeneral Information:

Area	- 38,450 sq miles
Population	- 35.3 million
Imports	- Grain, logs, machinery, chemicals, iron & steel scrap, textiles and fabric, transportation equipment
Exports	- Manufactured goods (textiles & clothing), fish, plywood, footwear and electronic products
Trading Partners	- U.S., Japan, Federal Republic of Germany, Canada, Great Britain, Australia, Hong Kong, Saudi Arabia, Kuwait, and Indonesia

Economy

Since the introduction the First Five Year Economic Development Plan in 1962, Korea has made impressive strides in overcoming such handicaps as scarcity of land, lack of natural resources, the devastations of war and has achieved an average growth rate of 9.3% from 1962 to 1975 inclusive. In monetary terms, the G.N.P. increased more than eight fold, from \$2.3 billion in 1962 to \$18.7 billion in 1975, while the per capita G.N.P. rose from \$87 to \$531. The share of the mining and manufacturing sector rose from 17% of the G.N.P. in 1962, to 29% in 1975, while that of the agricultural, forestry and fishery sector declined from 37% to 26%. The social overhead capital and other services sector dropped from 47% to 45% during the period. Exports increased from \$55 million in 1962 to \$5 billion in 1975 and a target of \$13 billion has been set for 1981, while imports reached \$6.6 billion in 1975 and are expected to total \$12.4 billion in 1981. Manufacturing industries have traditionally concentrated on the production of light industrial goods. However, production of the heavy and chemical industries now accounts for 30% of Korea's exports. The ratio of manufactured product exports to total exports has risen from 27% in 1962 to 88% in 1975. Korea is a member of GATT and has trade agreements with a number of countries including Canada.

Port and Harbour Development

In order to cope with Korea's rapidly growing economy and trade, considerable expansion of existing ports, and construction of new ones has been undertaken by the Korean government. There are now nineteen first class and twenty-four second class designated ports in South Korea and these are operated and administered by the newly inaugurated Korea Maritime and Port Authority. Design and construction of six industrial ports in connection with the industrial estates development program comes within the jurisdiction of the Bureau of Industrial

Location within the Ministry of Construction, but the ports will be turned over to the Korea Maritime and Port Authority upon completion of construction. Pusan (Busan) on the Southeast coast and Inchon on the Northwest coast handle about 90 percent of Korea's general cargo. The Korean government had made preliminary studies for a new port serving the second integrated steel mill at Asan Bay, south of Inchon, but the port was cancelled along with the mill. A total of six industrial ports are now under construction at Pukpyong, Pohang, Onsan, Masan, Okpo and Samil (Yochun).

The port of Samil (petrochemical and fertilizer plants) will be partially completed this year when the section serving the fertilizer plants is opened. The port will be fully completed by 1978. The port of Masan (free export zone) is now under construction and will be completed by 1981, while the port of Pukpyong (chemical plants) is now under construction with financing valued at \$40 million provided by the Overseas Economic Corporation of Japan. The port of Okpo (shipbuilding) is also under construction and both of those ports will be completed by 1978. New ports at Pohang (steel mill) and Onsan (pulp and chemical plants) will be completed by 1979.

Isigamajima Hasima Industrial and Toyomenka in Japan have won the contract to supply some of the equipment for the improvement of the port of Pusan financed by I.B.R.D. through an \$80 million loan, while the construction contract was awarded to a Korean firm, Hyundai Construction Co., Ltd. Ore and mineral handling equipment and container moving equipment (tractors, chassis, forklifts, frontloaders and mobile cranes) valued at approximately \$2.2 million will be purchased through an international bid to be held in October 1976. Planned completion date is 1978.

Mitsubishi Co. in Japan won the contract to supply the coal handling equipment for the coal pier improvement project at the port of Mukho. Upon completion of the Phase I study by Booz Allen & Hamilton of the U.S. early in 1976 concerning overall administration of Korea's port affairs, the Korea Maritime and Port Authority was inaugurated and it will appoint a consulting firm sometime this year in order to carry out the Phase II study concerning the operation of the port authority. This project will also be part of the total \$80 million loan which was provided by I.B.R.D.

As part of the improvement project for the port of Inchon (planned completion 1978 with \$16.3 million ADB financing of a total cost of \$25 million), maintenance shop equipment has been already delivered by a Japanese supplier and a local shipbuilder has supplied three tug boats. An invitation to bid (to be closed September 24, 1976) was made for the purchase of the communication equipment and the bid for purchasing a floating crane has been finalized. Construction of the breakwater, road paving and open storage areas is now underway by Dong-A Construction Co., Ltd.

The Phase II Study (Feasibility) covering Korea's first class ports to 1985 was completed by Trans-Asia Engineering Co. early this year. The estimated total cost of this work will be approximately \$100 million including a 4-5 percent consulting fee for designs. In this study, the consulting firm recommended another expansion of the ports of Pusan and Masan, development of the port of Cheju and additional improvements of the cargo handling equipment at the port of Inchon. Four more container cranes are to be installed at the port of Pusan in connection with the Phase II project. The Korean government is planning to obtain a \$60 million loan for this port development project in order to start the expansion program in 1978.

ITC Contact - Commercial Secretary - Seoul

LEBANONGeneral Information

Area	- 4,000 sq. miles
Population	- 3,200,000
Imports	- Machinery, transport equipment, electrical equipment and appliances, textiles, chemicals, foodstuffs, gold and jewellery, metal products.
Exports	- Fruits, non-metallic and metallic manufactures, leather goods, handicrafts.
Trade Partners	- U.S.A., F.R. Germany, France, Italy, U.K. Arab nations.

Economy

The Lebanese economy is principally an economy of services characterized by individual initiative and private enterprise. Thus banking and finance, tourism, free trade and transit, transport and communications, contribute roughly two-thirds of the national income, while the goods producing sectors of agriculture, industry, construction and handicrafts produce only one-third. The fact that the services sector occupies a high place is best illustrated by its power to offset the considerable adverse balance of trade, and to have attracted massive investment in real estate and bank deposits from neighbouring Arab oil states.

Lebanon is considered the banking and trade centre of the Middle East and an increasing number of foreign banks and international companies are establishing themselves in Beirut.

In relation to its population, Lebanon is one of the most industrialized countries of the Middle East. As a general rule, individual concerns are small and produce light consumer goods, food, textiles, chemicals, furniture and building materials. There are two refineries and two cement plants.

Lebanon's most important crops are apples, citrus and other fruits, vines, olives, potatoes and other vegetables, and some tobacco. Only a quarter of wheat requirements is produced in the country.

Port and Harbour Development

Lebanon has three major ports: Beirut, the largest with a free zone, handling more than 4 million tons a year; Tripoli, second port and terminal of oil pipeline from Iraq; Sidon, terminal of oil pipeline from Saudi Arabia.

With the co-operation of a U.S. firm of management consultants and a British firm of consulting engineers, the Lebanese government has made

a study for the modernization of the port of Beirut as well as the possibilities of its physical extension. While steps are being taken to improve existing facilities, a project has been designed to build a new dock especially destined to service container vessels; marine contractors have been called to submit their qualifications. Beirut port comprises three deep-water harbours, and the construction of this fourth harbour due to start about mid-1976 will contribute to a large extent to relieve the present congestion causing vessels to queue unduly for many days.

BAHRAINGeneral Information

- Area - 260 sq. miles
- Population - 248,000
- Imports - Machinery, building materials, iron and steel products, hardware, foodstuffs, chemicals and manufactured goods.
- Exports - Petroleum and Petroleum products.
- Trade Partners - U.K., U.S.A., Australia, Japan, W. Germany.

Economy

While oil contributes the largest part of Bahrain's GNP and provides about 80% of Government revenues, its contribution has been declining since 1970, while that of the industrial sector has been growing rapidly. Oil onshore reserves amount to about 375 million barrels and natural gas reserves are estimated at 20,000 billion cubic feet. Apart from oil refining, Bahrain has developed some industries including an aluminum smelter producing 120,000 tons per year, a flour mill producing 100 tons per day, a fishing company processing shrimp and a ship repairing company.

Bahrain, established as a free-trade zone in 1958, has a substantial role as entrepôt centre for the upper Gulf states including Saudi Arabia. In 1974, about 40% of its total imports of \$430 million were re-exported.

Port and Harbour Development

Having opened in 1962, the 30-foot deep port of Mina Sulman provides berths for six ocean-going vessels, with a modern tug, cargo handling equipment and bunkering facilities. Due to the great increase of trade in recent years port expansion has become a matter of top priority and further site development already underway is not expected to be complete until 1979. The entire port area when finished will be more than double its present size and cargo handling capacity is anticipated to increase three-fold. This development includes plans for the construction of 10 or more additional berths with extensive back-up facilities and new port buildings at a later date. Improved sea and land access is also planned.

Offshore site preparation has now been completed with regard to a large drydock and ship repair facility, Arab Shipbuilding and Repair Yard (ASRY), which is expected to become operational in 1977 and handle tankers up to 400,000 tons.

JORDANGeneral Information

Area	- 37,000 sq. miles
Population	- 2,560,000
Imports	- Foodstuffs, transportation equipment, machinery, textiles, oil and chemicals, consumer durables.
Exports	- Phosphate
Trade Partners:	- U.S.A., U.K. F.R. Germany, Syria, Lebanon, Japan.

Economy

Jordan is essentially an arid country with resources in phosphate. There is little industrial development although considerable effort is being given to phosphate mining and marble quarrying, supported by secondary industries, mainly an oil refinery, cement, tobacco, textile and a number of smaller factories in the consumer goods range. There are plans for the establishment of a potash extraction plant. Other mining prospects include low-grade copper and manganese.

Agriculture is of modest scale but a few sizeable irrigation and land reclamation works are being undertaken. Main agricultural products are field crops, vegetables and fruit.

Jordan is heavily dependent on outside financial economic and technical assistance. The main sources of development loans and subsidies are the United States, the United Kingdom, the World Bank and Arab nations.

Port and Harbour Development

The town of Aqaba, at the head of the Gulf of Aqaba (an arm of the Red Sea) is Jordan's only sea-port. The port offers a total quay length of 340 metres which can accommodate three cargo vessels, in addition to a special berthing area of 210 metres for the loading of phosphate destined for export. There is also an anchorage area with barge off-loading facilities. The port is working now at full capacity and queues of ships can be seen waiting for quay space. An extension is planned involving construction of additional berths, warehouses and ancillary facilities which, when completed, will more than double the port's present capacity. Studies have been made by the British consulting firm Rendel, Palmer and Tritton and it is anticipated that this project will be put to international tender shortly.

KUWAITGeneral Information

Area	- 7,500 sq. miles
Population	- 1,000,000 (approximately)
Imports	- Machinery, transport equipment, foodstuffs, textiles, building materials.
Exports	- Oil
Trade Partners	- Japan, U.S.A., U.K., F.R., Germany, Lebanon, France, Italy, India.

Economy

Kuwait's economy is based on oil which provides well over 90% of the country's income (\$9 billion in 1975). Chemical fertilizers are the major industry second to crude oil production and refining.

The range of imports is very wide owing to the comparatively unimportant part played by agriculture and domestic manufacture. Because industrial development is proceeding rather rapidly, machinery is the most important item accounting for about 25% of total imports. The Kuwait United Fisheries is expanding shrimp and prawn production which constitutes an important source of export revenues.

Port and Harbour Development

Shuwaikh is Kuwait's chief port. It is composed of five deep water berths to accommodate vessels of 30 feet draft, and three berths for medium vessels and small craft. One portion includes a deep-water berth 600 feet in length and is equipped with three and six ton electrical cranes. It also includes fixed dolphins where two vessels of 28 feet draft can take up berth in addition to light buoys along the approach channel to the port. The annual capacity of the port is 2 million tons. Extension is now proceeding in two stages: wharf and berth construction, and erection of buildings including air-conditioned warehouses, cold stores, and laying of roads, crane-tracks and pipelines.

Kuwait has a secondary port at Shuaiba. This port has a five-berth general cargo pier for vessels drawing up to 32 feet. There is also a small boat harbour, and an oil jetty used by Kuwait National Petroleum Company for exporting its refined products. A British consulting firm is preparing plans for extension and construction of a new oil pier has been awarded to a U.S. company.

I.T.C. Contact - Commercial Counsellor, Beirut, Lebanon.

PEOPLE'S DEMOCRATIC REPUBLIC OF YEMENGeneral Information

- Area - 111,000 sq. miles
- Population - 1,635,000
- Imports - Petroleum and petroleum products, textiles, foodstuffs, chemicals, manufactured goods.
- Exports - Petroleum and petroleum products.
- Trade Partners - U.K., Japan, South East Asia, China, Australia, Ship Bunkers.

Economy

The People's Democratic Republic of Yemen consists of the former British colony of Aden and former Aden Protectorates. It is sustained by the position of Aden on the main shipping route to Europe from the Far East, South Asia, Australia and East Africa, via the Suez Canal. This position had suffered a severe setback during the period 1967-75 when the Suez Canal was closed, but the Canal has now reopened and revitalized the bunkering activities and tourist trade.

There is little industrial infrastructure except a few solar salt pans and some service and packaging operations. The exception is the 100,000 b/day British Petroleum Refinery at Little Aden which generates a large share of the Government's revenue. Most of the other businesses and major traders and all banks were nationalized in 1970.

Only about a quarter of the arable land is used. Cotton, vegetables, tobacco are produced. Wheat is also grown but is not enough for the country's need. Efforts are concentrated on the development of the fishing industry under supervision of Canplan Ltd. of Halifax.

Port and Harbour Development

Aden port is one of the largest bunkering ports in the world and handles all of the Republic's trade. It does not have free port status; there is a free zone for the transit trade. Prior to closure of the Suez Canal in June 1967 it received about 6,500 ships per annum. The port authority expects this number will be exceeded this year and is making plans for development. Current improvements include dredging and deepening of the harbour to allow berthing of large steamers and tankers, and a second phase consists of the construction of new docks and transit sheds in addition to the provision of ancillary equipment.

I.T.C. Contact - Commercial Counsellor, Beirut, Lebanon.

QATARGeneral Information

Area	- 4,000 sq. miles
Population	- 180,000
Imports	- Machinery, transport equipment, building materials, iron and steel products, foodstuffs, chemicals, manufactured goods.
Exports	- Crude oil and fertilizers.
Trade Partners	- U.K., Japan, U.S.A., Lebanon, W. Germany, France, Australia.

Economy

The economy of Qatar is based mostly on oil which provided an annual income of approximately \$1.5 million in 1974. Though agricultural production has doubled in the last decade it remains a small factor in overall GNP. Production and exports of shrimp, however, are significant. Recent development in industry include the construction of a fertilizer plant, a flour mill, cement plant, a shrimp packing plant and an oil refinery. Studies are being conducted by foreign consultants for the construction of a steel mill and an aluminum smelter. Unemployment is virtually unknown as nationals are guaranteed government jobs and immigrants must be assured of a job before landing.

Port and Harbour Development

Doha Port is a four-berth, deep-water jetty which was constructed in 1969 and is linked with Doha town by a causeway. The port is at present under expansion which when completed is expected to almost double the size of the port.

Umm Said Harbour, accommodating smaller tankers up to 60,000 dwt, is still the country's main oil terminal. A 220,000-ton capacity tank farm is connected by a series of pipelines with the Qatar Petroleum Company's three main gathering stations. A 700-foot wide jetty is linked to a grain mill and to a fertilizer plant.

OMANGeneral Information

Area	- 120,000 sq. miles
Population	- 750,000
Imports	- Transport equipment, machinery, building materials, foodstuffs, chemicals and manufactured goods.
Exports	- Petroleum and petroleum products.
Trade Partners	- U.K., Arab nations, Japan, South Asia, Australia.

Economy

The economy of Oman is based almost entirely on oil which provides an annual income in the range of one billion dollars. Other exports include fish, dates and dry limes. There are no local industries of any importance.

Extensive development is in progress: electricity supplies, piped drinking water, school, hospital and other amenities are being introduced or extended. Major projects include new port facilities, roads, a new township and several first-class hotels.

British consultants are undertaking a water resources survey and American companies have been commissioned to survey Oman's fish resources and to develop a fisheries industry, and to undertake the development of agriculture.

Port and Harbour Development

Port Qaboos is Oman's chief port and handles most of the country's trade. It is a new port. It provides eight deep-water berths and container handling facilities; an extension is under way for accommodating medium and small vessels and sails. When fully completed in 1976-77 Port Qaboos will be able to handle 1,500,000 tons of shipping.

SYRIAGeneral Information

Area	- 72,000 sq. miles
Population	- 7 million
Imports	- Machinery, building materials, transport equipment, manufactured goods, chemicals, wheat, foodstuffs.
Exports:	- Crude oil, cotton, textiles, phosphates.
Trade Partners	- W. Germany, Italy, France, Lebanon, China, U.S.S.R.

Economy

Syria has a highly-centralized Government, with firm wage and price controls and is dominated economically by the public sector. It has great agricultural potential but farmers became reluctant to increase their investment in land since the issuance of the agrarian reform laws. Agriculture provides at present about one-third of the national income. The most valuable crop is cotton, which constitutes about 45% of the total exports. Grain is also cultivated in Syria but production is directly dependent on the amount of rainfall. A major irrigation project, the Euphrates Dam, is now under construction with Soviet aid which when completed is expected to facilitate the irrigation of 640,000 hectares.

The industrial sector has been growing steadily over the last two decades and has gradually replaced agriculture as the main contributor to national income. Textiles have traditionally constituted the most important industrial product. Other industries include cement plants, sugar refining, canning, food processing, vegetable oil extraction, soap, matches, glass and plastics.

Oil production in Syria is still of primary importance to the economy and approximately 15 million tons of crude oil were produced in 1975. The oil pipelines which cross Syrian territory are of importance to the national economy, representing a considerable source of foreign exchange. The main pipeline is that which runs from the former Iraq Petroleum Company's installations in Kirkuk (Iraq) to Tripoli in Lebanon cutting through approximately 300 miles of Syrian territory. Another line crosses Syria en route to Sidon (Lebanon) and a third line runs from Karatchouk through Homs to a terminal in Tartous.

Port and Harbour Development

The port of Lattakia was constructed in 1959; it handled 1.30 million tons of cargo in 1973. The port is currently under expansion and when completed in 1978 will increase the port's handling capacity to 2 million tons of cargo per annum. Depth is 33 ft.

Tartous Harbour went into operation in 1966 and occupies an area of 750 acres, 450 acres of which are dry land. In 1973, this port handled 975,000 tons of cargo. Depth is 32.5 ft.

Banias Harbour was constructed by the Iraq Petroleum Company to handle the oil transported by underground pipelines from Kirkuk (Iraq).

UNITED ARAB EMIRATESGeneral Information

The United Arab Emirates, formerly known as the Trucial States consist of Abu-Dhabi, Dubai, Sharja, Ajman, Umm al Qawain, Ras al Khaima and Fujaira.

- Area - 33,000 sq. miles. Abu Dhabi is the largest and has an area of 25,000 sq. miles.
- Population - 350,000 (estimated)
- Imports - Machinery, transport equipment, foodstuffs, iron, steel and building materials, oilfield equipment, chemicals and manufactured goods.
- Exports - Crude oil.
- Trade Partners - Japan, U.K., U.S.A., Switzerland, Germany, India, Pakistan and China.

Economy

The economic development of the United Arab Emirates is based mostly on oil. Abu Dhabi is the largest and richest. The tremendous growth of its oil revenues has already enabled her to claim to be the richest country in the world, in terms of per capita income. Dubai has long been the principal commercial centre and entrepôt for the Emirates, and in consequence has benefited greatly from oil boom in the area. Dubai re-exports more than 50% of its imports. The wealth generated by oil and trade has permitted a rapid urbanization and the financing of major public construction projects including airports, hospitals, schools, roads and ports throughout the Emirates.

Port and Harbour Development

Dubai is the main commercial centre and its port, Port Rashid, which went into full operation in 1972, has 16 deep-water berths of which 15 are for general cargo. Each has 600 feet of berthing space with a draft of 30 feet. Twelve of the cargo berths have their own storage capacity in the form of steel-framed transit sheds measuring 122 metres by 61 metres. The other three have been earmarked for bulk cargoes. The 16th berth is for oil tankers supplying Dubai's own need for refined products. A dry dock project is at present under construction and is expected to have two docks capable of handling 500,000-ton tankers, seven repair berths and also a third dock able to accommodate one million-ton tankers.

The present port of Abu Dhabi, Port Zayed, is under expansion and when completed will have 19 deep-water berths.

Sharja and Ras al Khaima are now constructing their own ports.

I.T.C. Contact - Commercial Counsellor, Beirut, Lebanon.

GULF STATES

Summary of Proposed Port Expansion

<u>State</u>	<u>Port</u>	<u>Existing Berths</u>	<u>Proposed Berths</u>
Bahrain	Mina Sulman	5/6 berths	Up to 6 berths considered. Prospective total: 11/12.
Kuwait	Kuwait	8 Cargo and 1 Passenger	12 berths planned for operation by 1977. Prospective total: 20.
Oman	Muscat	Barges Only	8 new berths (Port Qoboos).
Qatar	Doha	4 Berths	Complete new port under consideration.
Saudi Arabia	Damman	5 Berths	9 new berths operational by end of 1975, thereafter a further 13 new berths. Prospective total berths: 27.
Saudi Arabia	Jubail		Undisclosed number of berths under consideration.
U.A. Emirates	Dubai	15 in Phase I	30 plus additional berths reported to be under construction. Prospective total: 45.
U.A. Emirates	Abu Dhabi	Barges Only	Expansion to 17 berths.
U.A. Emirates	Sharjah	2 Berths	6 new general cargo berths. Prospective total: 8.

1974 data

GULF STATES

<u>Country</u>	<u>Population</u>	<u>Oil Income</u> <u>1974 Forecast</u> \$ million	<u>Proven Oil Reserves</u> <u>Million Tons</u>
Bahrain	215,000	N.A.	50
Kuwait	914,000	8.000	8,890
Northern Emirates	200,000	3.000	270
Oman	600,000	2.100	2,840
Qatar	170,000	9.600	2,200
Saudi Arabia	5,500,000	4.000	19,700
U.A.E. (Abu Dhabi)	80,000	42.000	4,900

1974 data

U.A.E. = United Arab Emirates

MALAYSIAGeneral Information

- Area - 128,500 sq. miles
- Population - 11.7 millions
- Imports - Consumer goods, machinery and equipment;
intermediate goods for manufacturing
- Exports - Rubber products, vegetable oils, forest products,
tin
- Trade Partners - Singapore, Western Europe, U.S.A., Japan and China

Economy

Malaysia is a member of the British Commonwealth and includes Malaya (West Malaysia), Sarawak and Sabah (East Malaysia). An objective is to develop strong Federal Government with some autonomy for state governments. It has the highest GNP in Southeast Asia except for Singapore. Malaysian economy is based on the production of oil, tin, rubber and timber; other products are palm oil, pepper, coconut products and hemp. Oil refineries, tire factories, textile mills, cement plants, chemical plants and a steel rolling mill form part of the total Malaysian economy.

Port and Harbour Development

The main ports currently being developed and for which future development is planned are Penang, Kelang, Kuantan and Johor in West Malaysia and Kuching and Sibul (Rajang P.A.) in Sarawak Eastern Malaysia.

At Penang a new bulk terminal is scheduled for completion by 1978. The work includes a new jetty head with detached mooring dolphins linked to a bulk storage yard and reclamation of 37 acres of land. Port equipment and mechanical cargo handling equipment including ship loaders and a conveyor system will be required and installed. Total cost is in the order of \$24 millions of which ADB funds amount to \$15 millions. Consultants for this work are Sir Bruce White, Wolfe, Barry and Partners in the U.K.

The Port of Johor is across the straits from Singapore. A bulk cargo terminal which will have initial capacity to handle 800,000 tons annually is planned. Container handling facilities at the Johor (Butterworth Wharves) will include construction of marshalling yards, a container freight station with container handling facilities such as straddle carriers, forklift trucks and a prime mover. International tenders will be called from consultants to undertake a study of the dockyards. This

study will examine expansion, modernization and reorganization of the yard.

Kelang, some 25 miles west of Kuala Lumpur on the Malay Peninsula, is undergoing fairly extensive development. About 300 acres of swampland is being reclaimed and 3500 feet of wharves will be constructed at an estimated cost of \$60 millions. Belgian and German contractors are involved; transit sheds, storage yard and bunkering facilities are planned. A wide variety of equipment such as prime movers, straddle carriers, and gantry cranes and forklifts will be required. The result of these improvements will be considerable increase in container cargo.

Kuantan on the East side of the Peninsula is the site for a new port and involves land clearance, dredging, construction of breakwaters and berthing facilities for vessels up to 35,000 dwt. Two cargo berths; a multi-purpose berth and a dolphin berth and mineral oil jetty will be constructed plus transit sheds, port buildings and port-related facilities. Paved areas and roads, communication and general service facilities will be required. Additionally two tugboats, a pilot launch, mooring boats, mobile firefighting units and cargo handling equipment will be required. The total estimated cost is about \$250 millions of which the Asian Development Bank (ADB) will put up \$30.4 millions for the fourth phase. The consultants are Bish & Partners in the Netherlands for detail engineering. The \$40 million second phase of the \$250 millions port project also involves dredging of the harbour basin and outer bar channels, land reclamation, drainage works and installation of buoys. A third phase includes construction of a deep-water wharf for small vessels and palm oil berths. Five (5) international contractors have submitted tenders. The Royal Malaysian Navy is constructing a new base at Lumut in the State of Perak. Construction began in June 1974 and it is estimated that by June 1977, \$50 millions worth of construction will have been completed. Five (5) large contracting firms have levelled about 2,500 acres of the 4,500 acre base. Construction of the Naval Training Centre is expected to be completed in 1979. A self-contained base will have all the facilities needed by a population of 30,000 naval and civilian staff and dependents, including schools, theatres, hospitals and post office, etc. A sewerage system and anti-pollution devices are also included in the construction plans to prevent environmental damage to the nearby tourist resort area of Telok Batek. The project is being supervised by the consultant firm of F.H. of Germany.

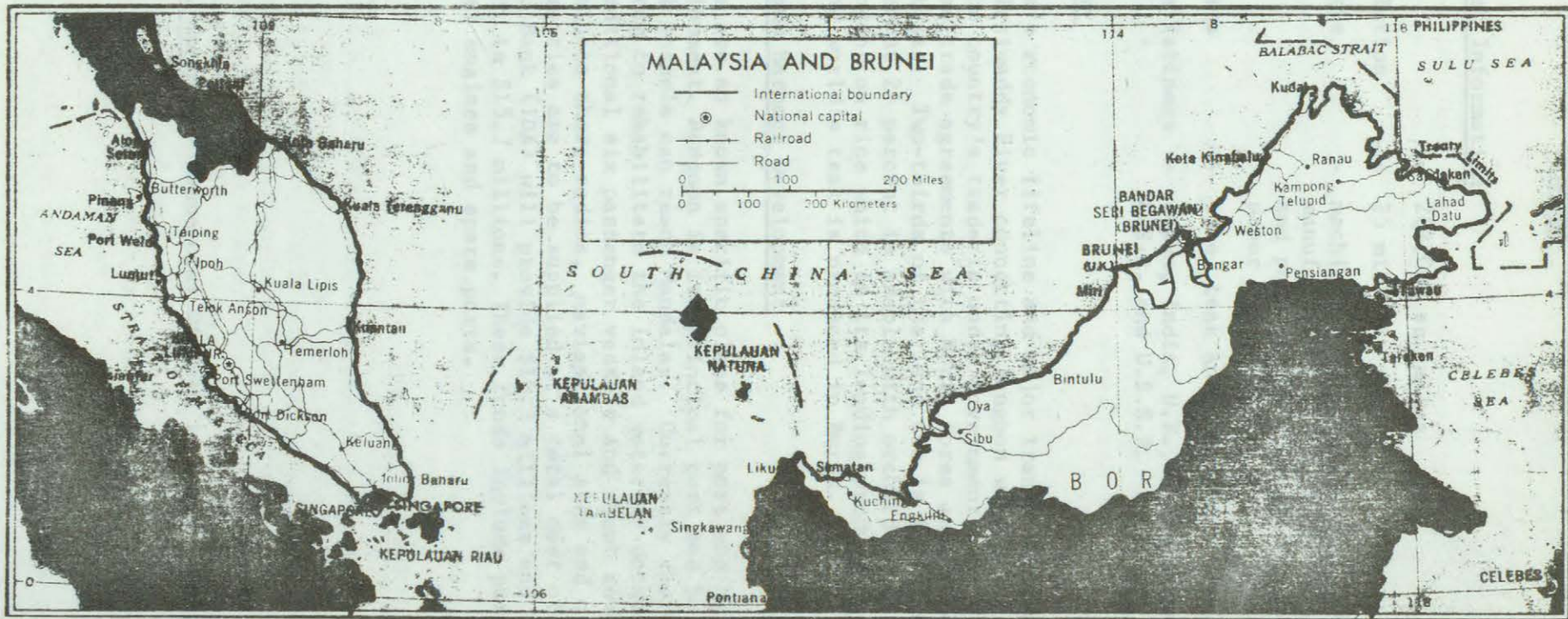
Kuching in East Malaysia is the principal port on the North coast of Sarawak. Japanese port consultants have set up and are supervising improvements at an estimated cost of \$7.5 millions. The ADB is providing \$5 millions. These improvements include the construction of an 800 foot wharf with an apron of 60 feet and other necessary installations plus procurement of a tugboat and cargo handling equipment.

A new deep water port will be constructed in East Malaysia in the State of Sarawak at Bintulu. A feasibility study has been completed by Norconsult

of Norway and includes an L.N.G. terminal and general cargo base. The study calls for development of ports in three stages with operations commencing in 1981. The capital cost of Phase 1 is estimated at \$140 millions. The foreign portion of Phase 1 construction cost is estimated to be \$52 millions with an additional \$12 millions for equipment, including dredging, materials handling equipment, tugs and other boats. The Malaysian Government is attaching a good deal of importance to this project and is unwilling to wait for the ADB to determine the feasibility of the project. Current information indicates that the Malaysian Government is prepared to go ahead with their own financing for at least Phase 1 of the project.

The Port of Sibul (Rajang P.A.) also on the North coast of Sarawak, is to be improved by a 1000 foot extension to the existing wharf and supporting facilities such as two transit sheds and mechanical cargo handling equipment. The total estimated cost is \$5.3 millions. Consultants for this work are Sir Bruce White, Wolfe, Barry & Partners (U.K.). A cost overrun of about \$5 millions is expected due to delays, price increases and currency realignment.

In the State of Sabah on the Northeast coast of Borneo, 1750 feet of quay transit sheds, buildings and technical services will be carried out plus additional cargo handling equipment for six ports in all. The Sabah Port Authority will also undergo training and the total cost is estimated at \$22 millions of which the World Bank (IBRD) will provide \$16 millions.



BURMAGeneral Information

- Area - 262,000 sq. miles
- Population - 25 million
- Imports - machinery and textiles, base metals and manufactures, dairy products, chemicals and pharmaceutical supplies, paper and paper products.
- Exports - rice, teak and oilcakes
- Trade Partners - Japan, India, U.K., Philippines, Ceylon, U.S.A. and U.S.S.R.

Economy

Burma's economic lifeline and major transportation system is the Irrawaddy River connecting Rangoon with Mandalay. Most of the country's trade is under government supervision and it has trade agreements with North Korea and Eastern Bloc countries. Two-thirds of the land use is forest and woodland and about 25 percent is arable with orchards. It is heavily dependent on rice which is its leading product and 80 percent of the world's teak is produced in Burma.

Port and Harbour Development

There are no known specific plans for port and harbour development. Rangoon is its principal port and barges and small vessels can reach Mandalay. Currently there is a program to rehabilitate the inland waterway dockyards. An additional six passenger vessels and about seventy sets of ship-to-shore radios, navigational aids and other accessories are to be supplied at a total cost of \$24 millions. World Bank (IDA) will provide \$16.3 millions and the undisbursed amount is \$15.7 millions. These funds include purchase of 160 diesel engines and spare parts.

I.T.C. Contact - Commercial Officer in Kuala Lumpur

MEXICOGeneral Information

- Area - 761,530 sq. miles
- Population - 60,000,000
- Imports - manufactured goods, machinery, transport and communication equipment, chemicals, crude materials, fuels, food and electrical power equipment
- Exports - cotton, textile fibres, cereals, fruit, vegetables, sugar, coffee, fish
- Trade Partners - U.S.A., F.R.G., Japan, France, Poland, Great Britain and Canada

Economy

Mexico has been successful in sustaining a six to seven percent annual growth rate over the last fifteen years with a modest increase in general price levels. This is due to some intelligent economic and financial policies, freedom from economic dogma and a continuity in good economic management unequalled elsewhere in Latin America.

Some 40 percent of the population still depends upon agriculture which now accounts for about 12 percent of the national income. First priority has been given to changes in economic policy required to maintain proper overall growth. It is the declared policy to give more attention to the quality of economic development in rural areas and plans are going ahead for a national water study to be carried out with World Bank help.

Mexico is almost self-sufficient in foodstuffs producing a wide range of temperate and tropical products. Mining continues to be the principal industry with silver production almost 1/4 of the world's total. Additionally Mexico has large coal resources and sizeable resources of iron ore.

Port and Harbour Development

With Inter-American Development Bank (IADB) assistance a program for integrated fisheries development is to be launched. This will include improvement of fishery fleet, port facilities and fisheries capacity. Additionally fleet equipment (\$22.3 millions), ten tuna seiners (\$33.6 millions), refrigeration equipment and equipment for a training center at a total cost of \$.75 millions will be required. Total project cost is \$84.65 millions and the Bank will provide \$43.5 millions. Bids have been called for fisheries, refrigeration equipment, construction of buildings, training centers, machinery vehicles and related equipment.

A current World Bank project provides funds to improve country

wide port planning, administration and operation mainly at the Ports of Tampico, Veracruz, Guaymas, Mazatlan and Manzanillo. Improvements are as follows:

- receiving tanker berths and grain handling installation at Veracruz;
- two self-propelled dredges and other dredging equipment;
- warehouses at Veracruz, Tampico, Mazatlan and Manzanillo; a transit shed at Veracruz; and container handling equipment at Manzanillo;
- refurbished facilities for handling ores and minerals at Tampico;
- fire-fighting and port communications equipment;
- mobile cargo-handling equipment;
- consulting services for operations and accounting;
- a national port development study; and
- dredging requirements.

The total cost of the above project is estimated at \$27.6 millions and the proposed World Bank loan amounts to \$20 millions.

A feasibility study is in hand directed at expanding and modernizing the Ports of Veracruz and/or Tampico. The study will review civil works and equipment required for handling containers and bulk minerals, dredging, cargo handling and port equipment; consulting services and training will also be reviewed. The total project cost is estimated at \$60 millions of which about \$25 millions would be foreign exchange. A World Bank appraisal mission has been scheduled.

Roca Fosforica Mexicana, S.A. de C.V. is planning a port in Baja California Sur to handle phosphates mining from its site north and west of La Paz. Feasibility studies are currently underway to determine the profitability of the mine and once this stage has been successfully passed, decisions of the port facilities will be forthcoming (approximately mid-1977).

NIGERIAGeneral Information

- Area - 356,669 sq. miles
- Population - 70 millions
- Imports - machinery, transport equipment, manufactured goods, chemicals and foods.
- Exports - cocoa, peanuts, crude petroleum, palmnuts and oil, crude rubber, hides and skins, tin.
- Trade Partners - U.K., Netherlands, F.R.G., U.S.A. and France

Economy

Agriculture and forestry form an essential part of Nigerian economy which relies heavily on exporting associated products. Principal products are peanuts, cocoa, timber, rubber, hides, cotton and palm products. Nigerian mineral products are petroleum, natural gas, iron ore, tin, coal and alloys. An increasing number of people are being employed in the expanding industrial sector.

Nigeria does not grant trade preferences to Commonwealth countries.

Port and Harbour Development

The principal ports are Lagos, Port Harcourt, Calabar and the Delta Ports Complex (Warri, Burutu, Koko and Sapele). Lagos is the largest of these ports and has suffered from cargo chaos since the Civil War ended in 1970.

All Nigerian ports are in need of development and improvement. Lagos ports will be improved through construction of an additional 1,000 meters of berths; new transit sheds, warehouses, improved road and rail connections; purchase of cargo handling equipment; dredging of channels and turning basin; consulting services for civil works construction and supervision. World Bank (I.B.R.D.) funds amounting to \$55 millions may be involved and the Nigerian Ports Authority (NPA) will put up \$29 millions.

NPA is planning to construct container freight stations linked with the Lagos port by rail and road. The total capital investment for this container system is projected at \$400 millions with about \$300 millions from Nigerian government agencies.

The Delta Ports complex improvements include the construction of three modern berths, transit sheds and warehouses, purchase of mechanical handling equipment and additional harbour craft. NPA plans to increase the capacity of Burutu by constructing a 2,000 ton slipway to cater for the needs of the oil industry; consultants are presently working on a time and cost schedule.

At Calabar it is proposed to construct a new port which will include four berths, transit sheds, warehouses and new cargo handling equipment and harbour craft. A Norwegian company has been appointed consultant under a Norwegian government technical assistance scheme. Construction has been scheduled for completion by the end of 1977. The projected cost is in the order of \$11 millions.

Port Harcourt will be improved through construction of additional four berths, ancillary sheds, a bulk handling berth for coal, iron ore and gypsum. Estimated cost is \$4 millions.

At Okrika preliminary studies are current for constructing a bigger jetty. The new jetty will accommodate two tankers simultaneously.

In addition to the above developments a general plan is to intensify dredging operations at all ports in Nigeria to accommodate larger vessels at all states of tide. Canadian Government financial assistance has been given to carry out research into navigation and siltation of the delta ports; the Danish Hydraulic Institute has been appointed to undertake this project.

DAHOMY SIERRA LEONE TOGO

The West African countries of Dahomey, Sierra Leone and Togo are accredited to the I.T.C. post at Lagos in Nigeria. Dahomey was formerly a member state of French West Africa and became an independent republic in 1960. Togo became an independent republic with the French Union in 1960. These two countries have close economic ties and defence and financial agreements with France. Togo is an associate member of the European Community.

Sierra Leone was previously a British protectorate and became a sovereign and independent member of the Commonwealth in 1961. These three countries have modest port and harbour improvement projects in hand. As noted they are tied closely to European interests, draw largely upon British, German and French expertise. In 1973 total CIDA assistance to these three countries amounted to some \$600,000.

The Port of Cotonou in Dahomey is congested and initial studies point out the need to enlarge the port at a total estimated cost of \$10 millions. The studies will be finished in 1975 and contracting activity will take place before the end of the year. It is expected that the work of dredging and providing additional berthing facilities will be completed by 1977-78. IDA (World Bank) funds amounting to \$8 millions are proposed. The fishing port sector will be financed with European assistance and includes the construction of a refrigerated warehouse and ice plant. The fishing fleet will be increased by 15 trawlers.

Approximately 25 percent of the 700,000 tonnes of merchandise handled by the Port of Cotonou is destined for Nigeria. Forecasts are that this figure will increase as demands on the services and efficiency of Nigerian ports become greater.

It is not likely that port and harbour development or improvement projects offer significant opportunities for Canadian participation.

GHANAGeneral Information

Area	- 92,100 sq. miles
Population	- 8.4 millions
Imports	- machinery and transport equipment, cereals, alumina, petroleum and textiles.
Exports	- cocoa and cocoa products, gold, diamonds, timber and aluminum.
Trade Partners	- U.K., U.S.A., Netherlands, Germany and U.S.S.R.

Economy

Ghana's economy is based primarily on agricultural products and mining resources. The principal crop is cocoa and the country produces upwards of one-third of total world supply. Cocoa forms about 70 percent of total value of exports.

Minerals produced in Ghana include gold, manganese, diamonds and bauxite.

Port and Harbour Development

At the present time the Ghanaian Railway and Ports Authority is concentrating primarily on improvements to railway communications, rolling stock, track maintenance and introduction of higher speed trains with improved line capacity and safety. CIDA assistance was mooted at one time but British involvement precluded Canadian financial aid. A British technical team has been involved in the railway modernization program.

Main ports are Tema and Takoradi. Plans for the Port of Tema include engineering survey and deepening the approaches, channels and berths and installation of a 45 ton heavy duty mobile crane.

I.T.C. Contact - Commercial Secretary in Lagos

PAKISTANGeneral Information

Area	- 329,000 sq. miles
Population	- 72 million
Imports	- Machinery and transport equipment, food, chemicals, industrial raw materials, crude oil, petroleum products and edible oils.
Exports	- Cotton, textiles, leather goods, sports goods, fish and rice.
Trade Partners	- U.K., U.S.A., Japan, F.R.G., China and Canada.

Economy

Pakistan's economy is primarily agricultural. However, industrialization is increasing and associated professional, technical and industrial skills developing. Principal agricultural crops are wheat, rice and cotton. Agriculture is centred on the fertile and intensely cultivated Indus Valley. The Government has approved plans for new fixed investment in 1976-77 of \$2.7 billion to be financed by external borrowings of \$1.225 billion and domestic savings of \$1,574 billion. Major problems are to stimulate output and employment, control inflation, increase public and private saving and investment and correct income disparities between the urban elite and the masses in the countryside. Pakistan's growth prospects for agricultural and industrial development are fairly good and, provided the political conditions remain stable, Pakistan would become self-sufficient in food supplies by 1980.

Port and Harbour Development

Karachi has been the only port of Pakistan since 1947 handling the country's seaborne trade and transit trade of Afghanistan. It has 24 general cargo berths and two oil terminals. The total import export cargo handled has increased from two million tons in 1948 to over 10 million tons in 1975. It is an extremely busy port and often two vessels are moored side by side at the same berth. The port facilities have been expanded over the years. Four general cargo berths are under construction and will be completed by the end of 1977. An oil terminal for 75,000 DWT vessels is scheduled to be completed by mid 1977.

The development program includes construction of additional six to eight berths on which work is expected to begin 1978-79 and completion is scheduled for 1982-83.

The country's second port, Port Qasim, is currently being constructed near Karachi. The detailed project engineering report was prepared by National Engineering Services (Pakistan) Ltd., in association with Swan Wooster Engineering Co. Ltd., Canada. The first phase to be completed by 1980 includes construction of (a) Iron ore and coal terminal (one berth) and (b) marginal wharves (seven berths and seven sheds). The second phase scheduled for completion in 1985 includes the construction of oil, fertilizer and grain terminals. Dredging operations will continue in both phases as well as installation of navigational aid and development of other port infrastructure (roads, rails, utilities).

The foreign exchange costs of the project are being financed by a number of international finance agencies. The major contributor to the project is the Asian Development Bank (ADB) - \$40 million for dredging operations and \$10 million for the construction of 3 marginal wharves. Belgium is committed to provide \$9.25 million for the construction of 4 marginal wharves for which contracts have been let to Belgian firms. There is a possibility of a second Belgian contribution of \$7.75 million. Britain has agreed to provide approximately \$11 million for purchase of British made navigational aids, port handling equipment and floating craft. Britain will also provide a team of management consultants for which a provision of \$460,000 has been made.

It is expected that France will provide \$17 million for the construction of iron ore and coal terminal. Germany will provide approximately \$680,000 commodity aid for Port Qasim requirements. The Canadian International Development Agency (CIDA) has agreed to provide \$6 million for Canadian engineering services: Overall project coordination, aerial mapping of the Port area, detailed design and construction supervision of 3 marginal wharfs, and for review and detailed design of bulk handling terminal for Phase II of the project. The Canadian consultants will be selected on the basis of competitive bid proposals and experience in port construction work. CIDA has also been requested to lend funds for purchase of Canadian-built cargo handling equipment for the marginal wharfs (fork lift trucks, mobile cranes, etc.). The purchase activity against ADB and CIDA funds is expected to pick up in the first quarter of 1977.

PERUGeneral Information

Area	- 496,222 sq. miles
Population	- 15,698,000
Imports	- machinery and transport equipment, food, chemicals and textiles
Exports	- copper, silver, iron, sugar, cotton, coffee and petroleum products, fish meal
Trade Partners	- U.S.A., F.R.G., Japan, U.K., Netherlands, Canada and Italy, Ecuador

Economy

Mining and fishing industries earn the bulk of Peru's foreign exchange. In the last two decades manufacturing has overtaken agriculture as the primary contributor to GNP. Agriculture is the principal occupation and textiles form an important part of the industry. Peru produces a wide variety of materials and other commodities such as footwear, cement, tires and rubber products, iron, steel and food processing.

Port and Harbour Development

The National Ports enterprise ENAPU-PERU was created in 1972 and co-ordinates activity and development of 23 maritime and river ports. The majority of Peruvian import traffic is handled by nine ports administered by ENAPU-PERU and in order of importance they are: Callao-Lima, Matarani, Chimbote, Salaverry, San Martin-Pisco, Paita, Talara, Ilo and Iquitos.

About \$45 million has been budgeted on expansion, renovation and acquisition of new equipment for the period 1975-1976. About 30% of this amount will be directed toward purchasing tugboats, elevators and cranes. In 1974 some 13.16 million tons of freight passed through ENAPU-PERU terminals representing about 75% of all Peruvian port traffic; 90% of that tonnage was registered in Callao, Talara, Chimbote, Matarani, Salaverry, San Martin and Iquitos.

The Lima-Amazon Transport Corridor is being developed and includes reconstruction of the Trans-Andean Corridor with feeder roads and maintenance equipment, plus expansion of the river port of Iquitos and construction of river ports at Pucallpa and Yurimaguas. Projected costs are estimated at \$68 million.

A project is planned for transforming Callao into "the first South American port" by gradually equipping it with container handling facilities, acquiring new dredges, constructing a new wharf, and extending and modernizing storage areas.

During the biennium of 1975-1976 about \$7.5 million will be invested for the expansion of the port of Matarani which is also designated as to become "the most important port on the southern part of the Peruvian coast".

Traffic with Bolivia has notably increased since the signing of an agreement allowing the shipment of cargo from Bolivian copper and tin mines.

The Bayovar industrial zone improvements are planned at the arrival point of the Trans-Andean oil pipeline, as well as exploitation of large phosphate deposits (2 million tons as a first step) and the creation of a large petro-chemical complex (non-ferrous metals and chemical fertilizers). Construction of a new oil terminal which will accommodate tankers of 250,000 tons is also planned.

Pacasmayo - construction of a new wharf.

Chimbote - has taken an increased importance and expansion of the installations for handling the Siderperu steel complex whose present capacity of 400,000 tons will progressively be increased to 2,000,000 tons. In a second step general mineral freight handling capacities will be increased. Fish oil, fish meal and oil coastal movement also accounted for a large percentage of traffic.

Ilo - expansion related to the industrial and mineral investments which will double the quantity of exported, concentrated or refined copper beginning in the second semester of 1976.

PHILIPPINESGeneral Information

Area	- 115,707 sq. miles
Population	- 37,180,000
Imports	- machinery and transport equipment, textiles and clothing, petroleum products, cereals, electrical equipment and chemicals
Exports	- copra, wood, ores, coconut oil, copper concentrates, sugar and canned fruits
Trade Partners	- U.S.A., Japan, Netherlands, F.R.G. and U.K.

Economy

Manufacturing is increasing in the Philippines but the economy is still primarily agricultural. Main crops are rice, corn, vegetables, fruits, nuts, coffee and cacao, sugar, copra, pineapple, bananas, abaca and tobacco.

The potential mineral resources include nickel, chromite, gold, copper, iron, silver, manganese, coal, gypsum, sulphur and mercury.

Manufacturing and production is focused mainly on processing and assembly operations involving food, tobacco, clothing, rubber, paints, plywood and paper products as well as small appliances and automobiles. Heavier industries are iron, steel and petroleum products, cement, chemicals and fertilizers.

Port and Harbour Development

Ports and shipping continue to provide an essential means of transport and communication among the islands of the archipelago. Relatively short inland distances limit railways to a small percentage of total traffic.

Manila is the most important port in the Philippines accounting for about seventy percent of all imports and five percent of export. F.R.G. is taking an interest in the international harbour at Manila and is also assisting in the developments of Davao and Iligan Ports in Mindanao.

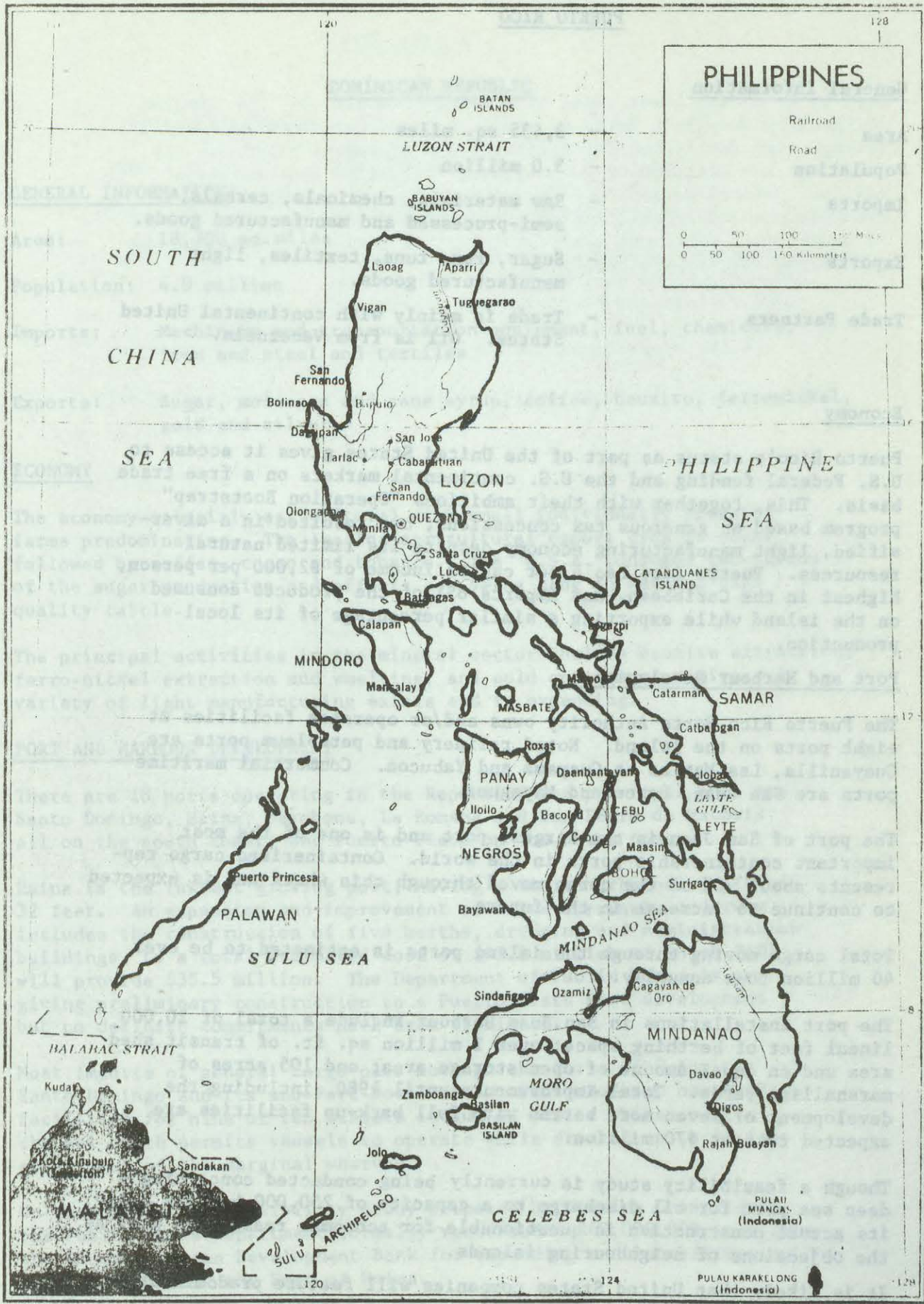
At present there is no single agency responsible for management and operation of public ports. The Bureau of Customs and Public Works are both involved in port management and measures designed to improve the situation are needed.

Under an ADB loan and with BCEOM (France) as consultants, a new

deep-sea port is being constructed at Polloc Harbour near Cotabato City on Mindanao at an estimated cost of \$9.9 millions.

World Bank assistance in the order of \$6.1 millions is being provided to improve quays, transit sheds and other amenities at the Port of Cagayan de Oro and the total cost of this work is estimated at \$12 millions. Consultants for this work are Sir William Halcrow and Partners in the U.K.

Under the same loan the Port of General Santos is being upgraded by quay extension, road surfacing, increased and improved storage areas, an administration building and other industrial amenities. Halcrow is responsible for detailed engineering and construction supervision.



PUERTO RICOGeneral Information

- Area - 3,435 sq. miles
- Population - 3.0 million
- Imports - Raw materials, chemicals, cereals, semi-processed and manufactured goods.
- Exports - Sugar, rum, tuna, textiles, light manufactured goods.
- Trade Partners - Trade is mainly with continental United States. Oil is from Venezuela.

Economy

Puerto Rico's status as part of the United States gives it access to U.S. Federal funding and the U.S. continental markets on a free trade basis. This, together with their ambitious "Operation Bootstrap" program based on generous tax concessions, has resulted in a diversified, light manufacturing economy despite its limited natural resources. Puerto Rico has a per capita income of \$2,000 per person, highest in the Caribbean, and imports 85% of the products consumed on the island while exporting a similar percentage of its local production.

Port and Harbour Development:

The Puerto Rico Ports Authority owns and/or operates facilities at eight ports on the island. Noted refinery and petroleum ports are Guayanilla, Las Marias at Guayama and Yabucoa. Commercial maritime ports are San Juan, Ponce and Mayaguez.

The port of San Juan is the largest port and is one of the most important containership ports in the world. Containerized cargo represents about 70% of the cargo moved through this wharf and is expected to continue to increase in the future.

Total cargo moving through the island ports is estimated to be over 40 million tons annually.

The port installations in San Juan Harbour include a total of 20,000 lineal feet of berthing space; over 1 million sq. ft. of transit shed area and an equal amount of open storage area; and 105 acres of marshalling yards. Total improvements until 1980, including the development of seven more berths with full back-up facilities are expected to cost \$70 million.

Though a feasibility study is currently being conducted concerning a deep sea port for oil discharge to a capacity of 250,000 barrels daily, its actual construction is questionable for economic reasons as well as the objections of neighbouring islands.

It is likely that United States companies will feature predominantly in any port or harbour development or improvement programs.

ITC Contact -- Consul and Trade Commissioner, Puerto Rico.

DOMINICAN REPUBLICGENERAL INFORMATION:

Area: 18,700 sq.miles
Population: 4.0 million
Imports: Machinery and transportation equipment, fuel, chemicals, iron and steel and textiles
Exports: Sugar, molasses and cane syrup, coffee, bauxite, ferronickel, gold and silver

ECONOMY

The economy is mainly agricultural with small individually operated farms predominating. The leading agricultural export crop is sugar followed by coffee, cacao and tobacco. The U.S.A. consumes two-thirds of the sugar production and efforts are being made to develop high quality cattle.

The principal activities in the mineral sector include bauxite extraction, ferro-nickel extraction and smelting, and gold and silver mining. A variety of light manufacturing exists and is expanding.

PORT AND HARBOUR DEVELOPMENT

There are 18 ports operating in the Republic; the principal ones are Santo Domingo, Haina, Barahona, La Romana and San Pedro de Macoris, all on the south coast; and Puerto Plata on the north coast.

Haina is the fastest growing port, having a minimum channel depth of 32 feet. An expansion and improvement of Haina currently underway includes the construction of five berths, dredging and administration buildings, to a total estimated cost of \$47.8 million of which IADB will provide \$35.5 million. The Department of Public Works is now giving preliminary construction to a Puerto Plata port development but no definite commitments have been finalized.

Most imports of general cargo pass through the Ports of Haina or Santo Domingo and its sub-Port Boca Chica. Santo Domingo has docking facilities for nine or ten vessels including cruise ships and the channel depth permits vessels to operate while drawing up to 34 feet as do most of the marginal wharves.

On the basis of a feasibility study prepared by Stanley Consultants the Public Works Department formally requested a \$60,000,000 loan from the Inter American Development Bank for expanding and rehabilitating the facilities of the Port of Haina.

This is to be the first phase of a two-phased \$125,000,000 program designed to establish Haina as the main cargo port leaving Santo Domingo port facilities for passenger and amusement purposes. It calls for the addition of five landing facilities (one container and four general cargo), the dredging of the port, widening of the entrance and rehabilitation of two brakewaters, construction of warehouses, container yards, maintenance facilities and administration and customs offices.

ITC CONTACT: COMMERCIAL OFFICER PUERTO RICO

SAUDI ARABIAGeneral Information

- Area: - 930,000 sq. miles
- Population: - 6-7,000,000 (estimated)
- Imports: - Manufactured goods, machinery and transportation equipment, motor vehicles, power generating equipment, food products and wood products.
- Exports: - Crude petroleum and petroleum products.
- Trade Partners: - U.S.A., U.K., Italy, Japan, FRG and Bahrain.

Economy

Saudi Arabia occupies most of the Arabian Peninsula. Annual rainfall is from 2-4 inches and this supports agriculture in very limited areas. The greatest single factor of economic importance is oil. From the income of its oil resources, Saudi Arabia is diversifying its economic development. Annual oil revenues exceed more than \$20 billion and the country is undergoing rapid economic expansion which necessitates huge imports of all kinds of heavy machinery and equipment.

Port and Harbour Development

The major ports are Jeddah on the Red Sea and Dammam on the Gulf; these are now strained to their limits and becoming inadequate to meet the requirements of an accelerating economy. Ships calling at these ports are subjected to long waits up to 100 days. Port development has been given priority in the country's \$142 million Second Five-Year Development Plan (1976-1980). This plan includes expansion of facilities at Jeddah and Dammam and the construction of new industrial port at Al Jubayl.

Recent contracts for port development construction and improvement have been given to Swedish, French and British companies. The government has also decided to build two military ports one on the west coast and one on the east; the U.S. Corps of Engineers has been awarded the 4 billion dollars contract to design these ports which will be able to receive heavy industrial plants in addition to military cargo.

- 2 -

On the Gulf side, the major Dammam port extension has been awarded to a consortium of FRG, Dutch and Greek companies which will build 16 general cargo and 2 Ro-Ro piers as well as harbour dredging, breakwaters, warehouses, rail roads and other suprastructure installations. Similarly at Al Jubayl, port and harbour improvement there will transform this fishing village into a city with oil, petrochemical and manufacturing industries; the contract for the second phase of development at this port is estimated at \$800 million and it has been awarded to a European consortium led by a Dutch company. A U.S. concern has the overall contract.

ITC Contact: Commercial Secretary, Jeddah

LESSER ANTILLESGeneral Information

- Area: - 2,900 sq. miles
- Population: - 1.65 millions
- Imports: - Machinery, general cargo, foodstuffs, manufactured goods.
- Exports: - Sugar, rum, molasses, bananas, cotton, tobacco and oil.
- Trade Partners: - U.S.A., U.K., Canada, France and West Indies.

Economy

The Lesser Antilles includes, Antigua, Barbados, Dominica, Grenada, Montserrat, St. Lucia, Trinidad and the St. Kitts group. With the exception of Trinidad and Tobago, agriculture and agricultural products form the bases for island economy. This is supported by some light manufacturing and assembly operations. Trinidad and Tobago have oil deposits and are exporting this commodity in increasing quantities. Tourism, although seasonal, continues to increase and forms an important segment of island economy.

Port and Harbour Development

- Antigua - There is no current development or improvement activity for the port.
- Barbados - Construction and equipment tenders for port and harbour improvements may be issued in the last quarter of 1976. In addition to increasing harbour depth and berthing facilities, it is expected that storage and warehouse facilities will also be increased.
- Dominica - The loan from the Caribbean Development Bank to Dominica for improved port facilities ran out before completion of the project. Warehousing facilities have yet to be completed.
- Grenada - There is no planned activity at either of these ports.
St. Vincent
- Montserrat - Montserrat is extending the jetty in order to accommodate vessels of increased draft. Plans for storage and warehouse facilities are not yet complete.

- 2 -

- St. Lucia - Port development and berthing facilities improvements in St. Lucia are now almost complete. Improvements to warehousing and storage facilities are still in hand. Canadian companies have been asked to submit quotations on equipment. The project is scheduled for completion in 1977.
- Trinidad - The port in Port of Spain is being developed for containers. Eventually two large container handling cranes will be installed and associated handling equipment will make Port of Spain one of the better equipped ports in the Eastern Caribbean. The possibility of other port activity also exists in the future with the planned establishment of a steel mill facility at Point Lisas in Trinidad. In addition improvement to port facilities and refinery capacity at Point Fortin is being considered.
- St. Kitts - Tenders for construction of the St. Kitts port are likely to be forthcoming in the first quarter of 1977.
- Guyana - The Government of Guyana foresees considerable work done to develop Georgetown port. This has been studied by a UNDP team. The funding situation is uncertain.

ITC Contact: Consul and Trade Commissioner, Port of Spain

MAURITIUSGeneral Information

Area	-	800 sq. miles
Population	-	774,000
Imports	-	manufactured goods, machinery and transport equipment, food, chemicals, crude materials and fuels
Exports	-	sugar
Trade Partners	-	U.K., South Africa, Canada, U.S.A., Australia, Burma and France

Economy

The Island of Mauritius is 550 miles East of Madagascar and an independent Nation within the Commonwealth. It is densely populated having more than 1,000 persons per square mile. The island depends upon sugar which accounts for 90 percent of export income. The sugar industry employs 60,000 people and other agricultural products are tea, tobacco and fibre. Only about 7,000 Mauritians are employed in manufacturing industries making soap, rum, tobacco products and matches.

Port and Harbour Development

Mauritius has a well developed transport system with a comprehensive network of roads, one airport and one commercial port - Port Louis.

In 1973 the British Consultants Sir Alexander Gibb and Partners recommended improvements at Port Louis. This was a British Overseas Development Administration project (BODA). Recommendations were accepted and formed the first phase of a master plan which will include three deep-water berths, a small jetty, mooring dolphins, administrative and workshop buildings, cargo handling equipment, tugs and completion of the port dredging program. The total cost of the project is estimated at \$12.36 millions of which IDA and UNDP financing will account for \$10.12 millions. U.K. has already supplied certain equipment including a dredger and separate contracts are anticipated for wharves, piers, and structural requirements. Undisbursed amount stands at \$10 millions.

I.T.C. Contact - Senior Trade Commissioner Johannesburg, South Africa

THAILANDGeneral Information

Area	- 198,250 sq. miles
Population	- 41,000,000
Imports	- industrial equipment and machinery, petroleum and petroleum products, semi-fabricated industrial materials
Exports	- rice, sugar, rubber, maize, tin and tapioca
Trade Partners	- Japan, U.S.A., Germany, Singapore & Taiwan

The Economy

Thailand is a predominantly agrarian economy. Foreign exchange earnings generated by agricultural and forestry exports, tourism, and foreign capital inflows have enabled the country to maintain its strong reserve position in the face of a rising import bill. Thailand's industrial base, while expanding, is not extensive and relies on imported capital, capital equipment, and industrial materials. The government's current economic policy concentrates on the further development of the agriculture sector and the expansion of agricultural related industry.

Port and Harbour Development

The estuarine Port of Bangkok, Thailand's only major commercial port, extends over 50 kilometers of the Chao Phya River. Facilities which include 66 wharfs, 21 midstream mooring buoys and 36 midstream dolphins can accommodate vessels up to 9,000 tons. The principal section of the port area is the Klong Toey Wharf which comprises 10 wharftside berths and 7 midriver berths spread between the 36 mooring dolphins. During 1974, Klong Toey handled approximately 4 million tons of import cargo but only 235,000 of exports. Private wharfs in the Port area handled one million tons of import cargo and 8.5 million tons of export cargo.

On-Going Expansion Projects.

An expansion program known as the Klong Toey East Quay Extension Project geared towards increasing capacity to 4.5 million tons, is currently underway. The project which is being partially financed by a \$12.5 million IBRD loan, calls for the completion of two new conventional berths by the end of 1975, two additional berths by mid-1976 and two container terminals and a 450 meter LASH wharf by mid 1977. NEDECO designed the project and is the supervising engineer. The works contract was awarded to the international consortium Mowlen-ItalThai-Prien Joint Venture Co. Ltd.

Planned Expansion Projects

Consideration was being given to building a deep sea port at Laem Chabang, a site on the eastern bank of the Gulf of Siam near to a proposed industrial estate. On the recommendation of the World Bank, however, this plan was suspended and the decision taken to convert for commercial use a portion of the Royal Thai Navy's deep sea port at Sattahip (also on the eastern bank).

The partial conversion of the six berth Sattahip facility is likely to involve the installation of warehouses, roads and loading and unloading facilities. The Port will handle primarily export cargo and together with the Port of Bangkok should adequately serve the country's international trade requirements for at least 10 years. The \$10-15 million project may be launched as early as 1976.

In addition, a new \$2.5 million coastal pier and a \$1.5 million 160 metre long sea port may be built at Songkhla and Phuket respectively. The Japanese Government is assisting in the feasibility study and design of the pier while the British Government is helping with the feasibility study and design of the Phuket port.

I.T.C. Contact - Commercial Secretary and Consul Bangkok, Thailand.

BANGLADESHGeneral Information

- Area - 55,126 sq. miles
- Population - 79 million
- Imports - food grains, cotton, industrial raw materials, machinery and consumer goods
- Exports - jute, fish, tea and rice
- Trade Partners - U.S.A., U.K., Japan, Hong Kong and India

Economy

The economy of Bangladesh is almost entirely agricultural. The primary crop and major staple food is rice. Fish is a domestic food as well as an export commodity to West Bengal and tea is a potential earner of foreign exchange. Bangladesh has not yet been able to earn sufficient foreign exchange through exports and has been unable to import essential commodities for its own economy. The only major commercial industry in Bangladesh is jute processing and the country has little known coal or mineral ore deposits at this time. The major obstacle to efficient industrial development is the lack of a transportation network.

Port and Harbour Development

Under World Bank (IDA) financial assistance amounting to \$10 millions the Bangladesh inland water facilities are being modernized, new vessels procured and technical assistance given to Inland Water Transport Agencies with the strengthening of sector planning.

A further and current World Bank project provides for spare parts, tools and equipment required in support of inland water transport rehabilitation and the modification or repair of the off-shore oil terminal at Chittagong. The total cost is estimated at \$6.57 millions of which IDA will provide \$4.1 millions. At May 1975 the undisbursed amount was \$3.9 millions.

The Asia Development Bank (ADB) is providing funds for the Chittagong port development. The work includes transit sheds, re-alignment of railway track, procurement of tug boat, construction and cargo handling equipment at a total cost of \$15.6 millions which will include \$6.8 millions in foreign exchange. Under the proposed loan about 1,500 tons of structural steel, 48,000 square meters of corrugated steel sheets, 23 fork-lift trucks, 5 mobile cranes and 20 tractor trailers will be required. Procurement started at the end of 1974. The consultants for this project are Louis Berger International, U.S.A. and NEDECO in Holland.

I.T.C. Contact - Commercial Secretary and Consul in Bangkok, Thailand

VENEZUELAGeneral Information

Area	- 352,143 sq. miles
Population	- 12,000,000
Imports	- vehicles, iron and steel, wheat, construction and mining equipment, organic chemicals
Exports	- petroleum and products, iron ore
Trade Partners	- U.S.A. Canada, U.K. and West Indies

Economy

Venezuela is one of the more economically stable of the South American Republics due mainly to considerable revenue from oil. It is the world's leading oil exporting country and the third largest producer. Petroleum and products account for over 90 percent of Venezuela's foreign exchange earnings.

Agricultural products are coffee, cocoa, sugar, grains, tobacco, cotton, beans, sisal, etc. About 40 percent of the population is engaged in agriculture.

Iron ore is a leading mineral. Other minerals found are manganese, phosphates, sulphur, coal, nickel and salt.

The country is not highly industrialized although many manufacturing industries have been developed in recent years. In order to encourage local production some industries receive tariff and import protection. Such industries are steel, sugar, petrochemical, hydro-electric power, plastic and rubber products, breweries, liquor, cigarettes, textiles, cement, paper, and packaging, conservation and foodstuff packaging, auto assembly plants, assembly and manufacture of household appliances, furniture, etc.

Port and Harbour Development

The two main ports of La Guaira and Puerto Cabello have been suffering from overcrowding of facilities for sometime. The Instituto Nacional de Puertos, the new autonomous port authority, has now been formed and is responsible for all aspects relating to port development and administration. The Institute is headed by Dr. Lauro Torres and the address is:

Instituto Nacional de Puertos
Edificio Disconti
Padre Sierra a Munoz
Caracas, Venezuela.

The ports of La Guaira and Puerto Cabello are to be enlarged in the very near future, and a new international port is to be built at La Ceiba, south of Lake Maracaibo. Bidding for work on the La Guaira extension is already in progress. Solicitation for the work in Puerto Cabello should be taking place shortly, but no date has been announced. About \$100 million is to be spent on the La Guaira and Puerto Cabello expansions.

Z A I R EGeneral Information

Area	- 904,747 sq. miles
Population	- 21.6 millions
Imports	- machinery, transportation equipment, textiles and foodstuffs
Exports	- copper, palm products, coffee, industrial diamonds
Trade Partners	- Belg./Lux., U.S.A. U.K., F.R.G., France and Italy

Economy

Formerly known as the Belgian Congo and the Democratic Republic of the Congo, Zaire was granted independence in 1960 and officially named in 1971.

Principal markets for Zaire exports are Belgium and other EEC countries. The wealth of the country lies in its mineral resources and the economy depends heavily on mining. The manufacturing industry produces consumer goods with emphasis on processed foods and clothing. Agricultural products are palm oils, timber, cotton; rubber, coffee and bananas. Zaire possesses immense hydro-electric potential. Copper is the chief mineral exported.

Because of its long historical association with European countries particularly France and Belgium, it is expected that the Zaire Government will continue to rely to a marked degree on those countries for its economic and technological development.

Port and Harbour Development

Zaire ports fall under the control of the government-owned enterprise ONATRA. The major sea port is Matadi which is linked to Kinshasa the capital. French and Belgian companies are prominent in Zaire port developments.

French and Belgian financing is being provided for a study on the Port of Banana and the importance of this particular port will continue

to increase because extensions to the river port of Matadi are limited. In addition, World Bank is still considering the rehabilitation and expansion of Kinshasa, Matadi and Ilebo ports. Total project cost are estimated at \$35 million. The Congo River is an important artery of the transportation system and port development along this river network may offer possibilities for Canadian companies.

The rehabilitation of Kinshasa and Matadi railway and inland water transport is being supported by the World Bank (IDA). The total project cost is estimated at \$52 millions and includes feasibility studies, training programs and technical assistance. The study for these two ports was awarded to Tractionnel of Belgium and the training program to ORT of Geneva.

A project is in hand to restore and improve Zaire river transport systems by increasing the navigability of the Congo River estuary and the Kasai River and rehabilitation of the river fleet. Out of a total World Bank financing amounting to \$7 millions, the undisbursed amount stands at approximately \$4 millions.

Although no specific details are available, the expansion and improvement of facilities at Ango-Ango is being considered together with the inland ports of Bumba, Akula and Mbandaka.

CAMEROONSGeneral Information

Area	- 183,012 sq. miles
Population	- 5,740,000
Imports	- petroleum, machinery and transport equipment, textiles and chemicals
Exports	- hardwood, coffee, cocoa, peanuts, palm kernels and palm oil, aluminum
Trade Partners	- France, F.R.G., U.S.A. Netherlands and Bel/Lux

Economy

Cameroons was formed as a Federal Republic in 1961. About 75 percent of its economic activity is agricultural. Palm oil is an important export crop. Agricultural products are the principal exports of the country and aluminum is the only non-agricultural product exported. The Edea aluminum plant produces over 50,000 tons of aluminum annually and dominates the metals industry. Improvement of rail and road networks is one of the country's most important development priorities.

Port and Harbour Development

The principal port is Douala and its capacity is estimated at 2.5 million tons. This port is overloaded and extensions are planned. Present installations include 2,000 yards of harbour accommodation and twelve docks.

A joint World Bank project is planned for relocation and/or improvement of fishing port, dredging of channel, construction of new log handling facilities at a total estimated cost of \$109.0 millions. First phase of extension planned is estimated at 24.7 billions F.C.F.A., financed respectively by AFDB, FED (EEC), FAC France, Caisse Centrale, Badea and Canada.

The small port of Kribi situated to the South of Douala is primarily used for lumber exports. Traffic at this port was more than 200,000 tons in 1975 which was a four fold increase from 1973. Access to the port have been improved in 1975. (250 millions F.C.F.A. invested).

A technico-economic study of Cap-Limboh port has been recently approved. Financing is assured by FED (EEC agency).

In common with other previous French colonies, France has been carrying out studies and is deeply involved in Cameroon port and its future development.

ITC Contact - Commercial Secretary in Kinshasa, Republic of Zaire

GABONGeneral Information

Area	- 103,089 miles
Population	- 950,000
Imports	- machinery, and transportation equipment, food, wine, beverages and cement
Exports	- wood, manganese, petroleum, uranium
Trade Partners	- France, U.S.A., F.R.G., R.K. and Cameroon

Economy

Up to mid-1960 the economy was principally based on exploitation of extensive forests. Rapid development of considerable mineral resources has diversified exports and added to national income. In recent years nearly 60 percent of the total value of exports has been accounted for by manganese, petroleum and uranium. The largest manganese reserves are at Moanda.

Inland and offshore oil field development continues to increase Gabon's petroleum production. Uranium is sold exclusively to the French Atomic Energy Commission. Agricultural products are mainly cacao, coffee and palm oil. Loss of farm labour to mining and forestry industries have contributed to declining agricultural production.

Port and Harbour Development

The principal port is Libreville - Owendo and preliminary studies for a deep-water port at Owendo started in 1965. This port is scheduled to be in service before the end of 1975 at a cost of \$35.2 millions. In common with neighboring West African countries a large part of the financing was through Fond European Development (FEB) and FAC.

The financial counsellor to the President, announced lately that following Owendo, extensions of Port Gentil, Mayumba and Sette-Cama (mineral) ports will be started. Detailed information on these projects is not yet available.

ITC Contact - Commercial Secretary in Kinshasa, Republic of Zaire

CONGO PEOPLES' REPUBLICGeneral Information

- Area - 132,046 sq. miles
- Population - 860,000
- Imports - manufactured goods, machinery, transporting equipment, food, chemicals, petroleum products
- Exports - peanuts, cotton, sugar, rice, agricultural products and hardwoods
- Trade Partners - France, U.K., Netherlands, U.S.A., F.R.G.

Economy

Formerly Middle Congo of French Equatorial Africa, the Republic achieved independence in 1960. Its capital is Brazzaville. The country is small in population and poor in resources. The Republic shares 430 miles of common Congo River frontier with Zaire. It has a wide variety of minerals which have been little developed because of limited concentrations and inadequate transport facilities. It is one of the least promising agricultural areas in Africa with generally infertile soil. However several pilot agricultural and forestry conservation projects have been instituted. There is some processing of palm oil; peanuts and rice and various agricultural products account for 60 percent of the value of Congo's exports.

Port and Harbour Development

Extension of the port facilities at Pointe Noire is being financed by European interests namely Fond European Development (FED) and FAC which is a French institution. The first phase consists of improved docking facilities and cargo handling equipment. This will be followed by the construction of storage facilities. The cost of the first phase is estimated at \$5.2 million and of this amount EDC is providing \$1.8 million.

In 1973 some 6,559,000 tons of cargo went through Pointe Noire of which more than 1.9 million tons consisted of Gabonese manganese.

I.T.C. Contact - Commercial Secretary in Kinshasa, Republic of Zaire

DEVELOPING COUNTRIES

Canadian Imports and Exports

\$ millions - Calendar Year 1974

<u>Asia</u>	<u>Imports</u>	<u>Exports</u>
Afghanistan	.1	1.6
Bangladesh	6.1	60.5
Burma	-	1.1
India	59.2	120.7
Indonesia	4.6	53.6
Khmer Republic and Laos	+	.3
Malaysia	61.4	29.3
Pakistan	15.7	71.5
South Vietnam	.2	6.9
Sri Lanka	18.6	3.6
Thailand	<u>6.6</u>	<u>24.8</u>
Sub-Total	172.5	373.9
 <u>Francophone Africa</u>		
Algeria	6.8	152.8
Cameroons	3.3	1.5
Dahomey	-	1.3
Gabon	4.8	1.8
Ivory Coast	4.1	1.9
Malagasy	.8	.5
Mauritania	7.2	.1
Morocco	1.1	2.5
Senegal	-	1.2
Togo	-	.9
Tunisia	.1	9.3
Zaire	<u>8.6</u>	<u>9.5</u>
Sub-total	36.8	183.7
 <u>Commonwealth Africa</u>		
Ghana	7.4	20.5
Kenya	11.7	5.5
Malawi	.5	.6
Mauritius	76.7	1.6
Nigeria	53.8	23.4
Tanzania	9.1	11.9
Uganda	3.5	.7
Zambia	<u>-</u>	<u>23.5</u>
Sub-total	162.7	87.8

<u>Commonwealth Caribbean</u>	<u>Imports</u>	<u>Exports</u>
Barbados	4.7	13.2
Belize	1.8	2.1
Guyana	14.2	10.5
Jamaica	24.6	45.1
Leeward and Windward Islands	.5	12.5
Trinidad and Tobago	<u>22.3</u>	<u>25.8</u>
Sub-total	68.1	109.2
<u>Latin America</u>		
Brazil	112.2	393.4
Chile	54.6	29.8
Colombia	39.1	41.9
Costa Rica	9.7	14.5
Cuba	76.3	144.7
Ecuador	39.1	11.5
El Salvador	7.2	8.2
Guatemala	10.3	9.0
Haiti	4.3	11.3
Honduras	15.3	8.6
Nicaragua	6.6	5.4
Peru	<u>13.4</u>	<u>64.6</u>
Sub-total	338.1	742.9
<u>Other Countries</u>		
People's Republic of China	61.0	434.0
Ethiopia	<u>.4</u>	<u>2.9</u>
Sub-total	61.4	436.9

AREAS OF OPPORTUNITY

The section of this Report which deals with port development and improvement in third world countries briefly describes current and planned projects. To a degree the information is historical because, in some cases, the proposed projects described in the section may have commenced. However the summary does point up the magnitude and diversity of present opportunities. The principal areas on which to focus are emphasized in the text of this section.

The governments and port authorities in developing countries will continue to be faced with critical economic and technological decisions concerning port operation, construction and improvement. Not having the adequate engineering and management skills available, and often drawing financial support from bilateral and multilateral sources, developing countries will continue to be dependent upon western world technology and its proven equipment in order to meet the growth of international trade. Cargo handling methods and equipment will also demand the same level of engineering skills as for port development. The two are complementary.

At January, 1976, World Bank funds in the order of \$1 billion are being provided for port and harbour improvement including provision of capital equipment. Similarly, the Asian, African, Caribbean and Inter-American Banks provide funds for port development on a regional basis. Although these funds are not so massive as those of the World Bank (Asian Development Bank - \$184 million at January, 1976), they involve projects of significant export potential.

Principal Areas of Opportunity

Canada has experienced a fair degree of success in securing contracts for port design, construction and improvement in developing countries. In the

main, consulting and engineering companies have featured predominantly in port development. Because of the increase of Canadian direct and indirect aid through agencies such as CIDA, the World Bank and International Banks the majority of future opportunities in the ports sector will continue to be in those developing (including oil-rich) countries where congestion and inefficient cargo handling equipment and methods exist. In some areas, for example the Persian Gulf, port, harbour and marine terminal construction and improvement is proceeding at a rapid pace but there are inherent dangers of over-proliferation which in the long term may lead to facility under-utilization.

At this present time the principal areas for potential export business are seen to be:

Brazil	India
China	Indonesia
Cuba	Mexico
Gulf States	Saudi Arabia

The above are not listed in any order of priority.

In many developing lands the traditional dependency on the mother country is now greatly diminished. Governments long saddled with a single source of supply are encouraging new ties, business and trading associations.

The summaries which follow were compiled in January, 1976, and represent the status of port and associated developments at that time.

Brazil

Canadian consulting, engineering, bulk cargo systems design and manufacturing capabilities are already well recognized and established in Brazil. In terms of the port sector recent projects include the upgrading of bulk iron ore shipping facilities, modernization of ore terminals and navigational channel dredging and revetment. Projects involving consortia and turnkey operations are numerous; many of them associated with improved mine, rail and port facilities. New grain berths and container terminals, as at Santos, are being planned and may be assisted through World Bank funds. Related indirectly to marine matters, the large Sao Francisco Valley development project will involve the construction of civil works and will be awarded on the basis of international competitive bidding. Planned port and marine terminal developments will necessitate improvements in bulk and general cargo handling methods which, in turn, will offer a wide range of export opportunities.

China

China is continuing the program to develop, expand and modernize its ports and harbours. From 1976 through 1981 intensive effort is planned and high priority is being given to port extensions, improvement of cargo handling gear and the acceleration of vessel turn-around time. Whilst "self-reliance" is the prevailing motif, the People's Republic will need to reinforce its efforts by offshore purchases of goods and services. The official plan calls for major improvements at the 10 principal ports including Dairen, Hsinking, Shanghai and Whampoa. Complementing this, secondary ports are to be upgraded so that smaller vessels in the 5,000 dwt class may be redirected there from the larger ports.

Cuba

The present climate of accord and continuing co-operation with Cuba provides export opportunities for Canadian industry in construction and improvement of Cuban ports, harbours and marine terminals. We are aware that more efficient methods of cargo handling are being planned providing opportunities for manufacturers of bulk and general cargo handling systems and equipment. The Ministry of Mercantile Marine and Ports has laid out plans for port improvement and development and stresses the need for high-rate-capacity cargo handling equipment for fertilizers, coal and other minerals. Plans are being prepared for new docking and berthing installations on both north and south coasts. Rail and road links with the ports are being improved. A feasibility study and preliminary design for what will be Cuba's first major shipyard is to be contracted by the Ministry of Industrial Development. Initially, the proposed shipyard will be used for building vessels for Cuba's own merchant fleet.

Gulf States

Port congestion may be the greatest hindrance to development in the Middle East and particularly in the Gulf States. The increased purchasing power of oil-rich countries has led to heavy building programs of all kinds and for which most goods and services are imported. This has led to great pressures on existing ports. Large scale expansion plans have been drawn up for the Gulf ports and this provides many opportunities for consultant, construction and equipment supply. Programs are in hand at almost every port to expand and upgrade cargo handling capabilities. Meanwhile, the short-term forecast is for longer waiting periods for unloading cargoes.

India

In late 1975 a 20-point plan was adopted with the aim of improving productivity at Indian ports, chief among which are Bombay, Calcutta, Madras, Kandla and Cochin. The Indian Government plans also include development at Haldia, Visakhapatnam and Paradip to provide additional mineral stockpiling and handling facilities. Bombay, the premier port, handles 45% of India's oil traffic; it is the principal general cargo port and has borne the brunt of heavy grain imports in the last decade. A satellite port across the harbour at Nhava-Sheva may provide much relief and port-based industries will be established there. At Haldia an iron ore berth for 80,000 dwt vessels is being provided and coal and fertilizer berths for 50,000 dwt ships. Other Indian ports which may be further developed or improved are at Tuticrin and Mangalore, which came into operation last year. Tuticrin handles coal imports and salt exports. Mangalore will be provided with handling facilities for iron ore in slurry form. India is making a bid to re-emerge as a coal exporter to Europe and Japan and the international oil crisis has revived the demand for this commodity which is low in sulphur content. It follows that plans may develop to enlarge bulk handling of coal for export.

Indonesia

Canada's trade with Indonesia is relatively small but is growing. Large development projects are being carried out by Canadian consulting and engineering companies including port development, nickel mining, road building and municipal construction. There is an urgent need to expand and improve Indonesian ports and to upgrade bulk and general cargo handling operations and equipment. As an example, the port of Belawa in northeastern Sumatra is Indonesia's third port and its present cargo handling capacity is about 1.7 million tons; traffic at this port is expected to increase to 4.0 million tons by 1983 and five additional berths for ocean-going

vessels are urgently required. Fish processing and refrigeration plants are being planned for installation at certain ports and harbours; civil works will be carried out by local contractors. In the past, foreign experts including British, Dutch, German and Japanese teams have been attached to the Department of Commerce to advise on development and cargo handling. Canadian expertise has been established and is well recognized; this provides increasing opportunities for bidding on a wide range of export business. Long-term Bank assistance for improvements in inter-island shipping at a total estimated cost of \$200 million is planned.

Mexico

The Mexican Government has launched a multi-million dollar port expansion program which calls for introduction of highly-automated cargo handling gear at all major Mexican ports. In recent months Mexico has received a \$40 million loan from the World Bank for port development and may be seeking a further loan so that individual ports may carry out their own projects. In the order of \$300 million has already been allocated by the Government with the objective of making Mexican ports competitive, particularly those in the Gulf area through which the country has been handling almost \$1 billion worth of products annually. The Mexican Institute for Foreign Trade has stated that it will leave nothing undone to ensure that its ports are competitively efficient. Port planning calls for developing equal facilities at all Mexican deep-sea ports to enable shippers to choose any of them on an equal basis. Modern, heavy-duty container cranes will replace those now being used. In recent months Mexico's container operations have more than doubled in volume; the port of Tampico, which is wholly-owned and operated by the workers, will undertake a major expansion to speed up containerization cargoes.

Saudi Arabia

The Saudi Arabian five-year plan calls for large expenditures, derived from huge oil revenues, to modernize the Kingdom which has a population of upwards of 8 million. The Foreign Minister has noted similar problems in that Canada and Saudi Arabia have large land masses and small populations. In common with neighbouring Persian Gulf ports, vessels are often faced with a three-month wait to unload. Plans call for 20 new berthing stations at Jidda on the Red Sea and a significant increase in the number of berths and terminals on the west coast. The port of Dammam on the Gulf will have 16 new berths equipped with warehouses, cargo handling equipment and bunkering facilities. Saudi Arabia has one of the world's largest known oil reserves and will continue to offer good export opportunities for Canadian industry. At the present time relations continue to be good and Canadian expertise in some key fields of development is already established.

Export opportunities in developing countries will fluctuate because of changing economic conditions, discoveries or exhaustion of mineral or natural resources, forming or strengthening of bilateral associations and agreements or severance of previous ties. The most effective means of keeping abreast of export opportunities is through direct approach and personal contact. The Department's overseas posts provide an excellent service through which Canadian industry is readily able to ascertain and follow-up on current and planned projects where goods and services may be required.

EXPORT OPPORTUNITIES AND PROBLEM AREAS

Export Opportunity Information

Canadian industry is advised or becomes aware of export opportunities in port, harbour and marine terminal developments from various sources:

- In the case of companies having previously undertaken foreign contracts, successful completion leads to further opportunities and, most importantly, promotes wider foreign recognition;
- In terms of Canadian industry participation, programs and projects are promoted by CIDA through the agency's Bilateral, Multilateral and Special Programs branches;
- Previous industrial export activity and a maintained liaison and exchange of information between companies and I.T.C. posts abroad provide continuing information on planned or foreseen requirements and opportunities for export goods and services;
- Project opportunities funded by the World Bank and other international banks are issued to Canadian industry in the form of Project Sector Lists. The International Financing Branch within I.T.C. provides a fully-computerized mailing and distribution system. This information is updated monthly. For its part, the industry can make contact with key procurement people in borrowing countries and through I.T.C. staffs;
- Where individual company financial capability permits, industry may establish its own representative or agent in strategic areas to provide information on current or planned projects;
- Inter-company exchange of foreign business information is a further means of promoting wider Canadian export activity.

In the case of multi-lateral aid such as provided by the World Bank, this and other similar institutions are supported by several countries. It follows that the business is commercial and competitive, therefore it requires the same promotional drive as for other export business. There is no substitute for direct and concentrated company promotional activity.

Problem Areas

One of the principal comments voiced by the consultants and manufacturing industry is that pertinent information is not available quickly enough. However there is no substitute for personal contact through I.T.C. posts abroad or reliable agents and persistent and intensive follow-up. Seeking foreign business or pursuing reliable lead information can be an expensive enterprise, particularly for medium-sized and small companies. In proper circumstances, and providing certain criteria are met, departmental funds can be made available to Canadian industry to seek out export opportunities.

The record is clear in that those Canadian companies which have been successful in providing goods and services for export have generally achieved a reputation for efficiency and on-time delivery. This inevitably has led to further business opportunities.

Some of the difficulties and problems in becoming aware of and achieving a greater degree of export business in port and harbour development follow.

Canadian Government related

- need for early advice from I.T.C. posts and staffs at lending institutions concerning foreseen or planned development projects
- need for a focal point within the Canadian government from which information concerning export opportunities can be rapidly disseminated
- understanding of Canadian government departmental and agency roles in promoting and supporting export opportunities
- understanding Canadian government departmental and agency interrelationships and responsibilities
- overlapping of Provincial and Federal government foreign missions and business promotion activity

Foreign Government related

- stability of government in the aid-recipient country
- risk of non-payment for services rendered
- language barriers and effects of political influence and local patronage
- lack of knowledge of local laws and of contract and agreement formats
- registration and recognition of professional personnel

Canadian Industry related

- lack of Canadian inter-company communication concerning export opportunities
- companies operating by choice or by parent direction in domestic or North American markets only
- difficulties in forming Canadian consortia
- need for closer consultant/construction/manufacturing industry co-operation
- high cost of pursuing overseas projects
- difficulty in achieving sufficient Canadian content to satisfy and warrant CIDA and EDC financial support
- lack of initiative and reluctance to venture into export markets.

The more experienced exporting companies may be able to overcome or circumvent certain of these problems. For its part, departmental planning and policy formulation can ensure that industry is provided with timely advice and assistance so that the best advantage is taken of all export opportunities.

CONCLUSIONS

The western world is in a creative and expanding era of super ships, super tankers and super ports. Developing countries are directly affected by these recent and dramatic technological trends. The complexity of port planning and design, port and harbour construction, maintenance and cargo handling problems are common to both advanced and third world nations. As developing countries continue to expand their economies, the demand for greater port efficiency, as well as modern manufactured consumer goods, will increase. Modern vessels with high tonnages are expensive units and economy demands that berthing and cargo handling facilities provide the quickest possible turn-around time.

The recent and notable port developments in Canada demonstrate the awareness of Government and Industry planners and engineers to the essential need for continuing research and an understanding of the problems of working on the lakes or at coastal locations.

In terms of cargo handling equipment, Canadian hardware developers and manufacturers are making significant improvements in the maneuverability and mobility of shipborne and dockside equipment. Many of the companies producing mobile equipment such as forklifts and straddle carriers are subsidiary concerns. This should not preclude or deter Canadian in-house research and development effort or impede the freedom to investigate and manufacture goods for foreign markets.

The analysis of Canadian capabilities in this Report is provided under three main headings (Consulting, Construction and Mobile Equipment); the tabulation emphasizes the wide diversity of industrial skills and accomplishments. In some cases individual company claims to certain capabilities

may be mildly expansive. However, this is a more desirable trait than reluctance to broaden company creative activity. In general terms it can be said that the industry is internationally competitive. An urgent need is to bring together the consultants, construction and manufacturing sectors to operate as a cohesive team.

Funds for port projects in poorer countries may be obtained through international lending institutions such as the World Bank. Canada makes a sizeable contribution to International Banks; the objective of these organizations is to make effective use of funds in third world development. CIDA administers the official Canadian program of international development co-operation. There are inherent benefits to Canada through CIDA's operations; jobs are created in all sectors of the economy and in all regions where market opportunities abroad are promoted. The CIDA principle that there should be a reasonable percentage of Canadian content in funded projects should ensure that all phases of the work are available for bidding. In providing funds due consideration should be given to ensure that manufacture and hardware packages are included in contracts.

Ports and harbours are the physical gateways to international trade. Economic growth, particularly in developing countries, is often severely restricted by inadequate marine facilities. The continuing growth of industrial development and competence in Canada, coupled with a significant level of financial aid to developing countries, will ensure that Canadian skills and funds are used to the maximum advantage of both donor and recipient.

