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**PROPOSED INTEGRATED AIR CARGO
COMPLEX IN KERALA**

TRAFFIC SURVEY REPORT

BY

**THE BUREAU OF ECONOMICS & STATISTICS
TRIVANDRUM
DECEMBER 1978**

PROPOSED BY THE BOARD OF

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RAILROADS OF THE STATE

FOR THE YEAR 1900

IN THE

MONTH OF



FOREWORD

Government of India have taken a policy decision to set up 'Integrated Air Cargo Complexes' one in each State, in the inland airports. The Government of Kerala have entrusted with the Bureau of Economics and Statistics, the conduct of the traffic potential survey, as a preliminary to the setting up of the Air Cargo Complex in the State. The investigations reveal that both the exports and imports by air will develop to a substantial extent provided the need based infrastructural facilities in the field of customs clearance, warehousing etc., are made available. The air Cargo Potential of the State is promising and this justifies the setting up of the proposed air cargo complex in the State. The time is propitious for a concerted effort to give a boost to the fast developing trade particularly with the Gulf Countries and the Air Cargo Complex can play a crucial role in this.

Considering the importance of the survey, even the primary investigations were entrusted with District level officers of the Bureau, appointed exclusively for the purpose and I appreciate the good work done by them in time.

Sri R. Gopalakrishnan Nair, Joint Director was in overall charge of the operations and this report was prepared by him and the Research Officer Sri C. Bhaskaran.

Trivandrum,
10-1-1979.

DR. P.A. NAIR,
Director,
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PROPOSED INTEGRATED AIR CARGO COMPLEX IN KERALA TRAFFIC SURVEY

I. Introduction

The question of establishing an integrated air cargo complex at any of the inland airport in the State is under the active consideration of the Government of India. The Government of Kerala, as also the South-Western India Shippers' Association have been pursuing for a long time the necessity of providing customs clearance facilities, for various types of exports at Cochin airport. Besides, the exporting community in the State have been pressing upon the Civil Aviation Authorities as also the National Airlines the need for providing requisite warehousing facilities at Cochin airport for storage of export shipments prior to uplifting. The exporters have often been bringing to the notice of all authorities concerned the need for increasing air cargo carrying capacity ex-Cochin. The recent development of the Trivandrum airport into an International airport consequent on the introduction of direct flights to the Gulf region to contain the heavy rush of job-seekers to the Gulf Countries has increased simultaneously the air cargo carrying capacity to the potential markets in West Asia. The cargo carrying capacity of these bigger crafts are now not being utilised in the absence of customs clearance facilities. The above factors indicate that the exports by air from this state will develop to a substantial extent provided the need based infrastructural facilities in the field of customs clearance, warehousing etc., are accorded for which the setting up of an integrated air cargo complex in the state has to be considered in the right perspective.

For the above purpose the Government of Kerala has been requested to undertake a traffic survey to have a realistic assessment of the potential of export/import traffic that could be routed through the airports in the state direct to and from destinations abroad. The Government of Kerala have entrusted the conduct of the traffic survey with the Bureau of Economics and Statistics vide their letter No. 41347/E1/77/ID Industries (E) Department dated 24-2-1978.

The Trend in Airborne Trade:

As a worldwide phenomenon, the export-import traffic is in the process of assuming new dimensions of staggering importance. As a result of the deep seated changes in the modern markets like less preference for standardised products, quick changes in fashion priorities etc. the time lag between the buyer and the seller is getting reduced considerably day by day. The traditional monopoly over export-import traffic enjoyed by the oceanic mode of transportation is gradually losing and is giving way to the increasing volume of airborne traffic.

India with her wide base of export-import trade has no less responded to this modern trend in cargo traffic. In India, airborne traffic is increasing year after year both in volume and magnitude. This is evident from the fact that during the three fiscal years from 1973-74 to 1976-77 the total volume of airborne exports rose from Rs. 263.63 crores to Rs. 840.43 crores and that of imports from Rs. 175.87 crores to Rs. 402.62 crores. * With this sharp increase, the share of air borne exports in the total value of the country's exports touched the all time higher percentage of 17 in 1976-77 and that of imports 8 percent. Kerala, a state well-known for her high value export products with her considerable contribution towards the foreign exchange earnings of the national economy has also deeply felt the need for getting increased facilities for boosting up her airborne trade in recent years. Though exports from Kerala had always exhibited an upward trend the availability of well organised traffic services were often very limited. This case was brought to the notice of all India authorities.

In the meeting of the "Standing Committee on Promotion of Exports by Air" (Scope Air) held at Bangalore in May 1977, the need for an early establishment of an Air Cargo Complex at Cochin airport was considered. The meeting has decided to request the Government of Kerala to undertake a traffic survey to assess the potentialities of import/export cargo traffic through Cochin airport. The Government of India in a subsequent communication to the State Government has requested that a traffic survey of both Cochin and Trivandrum airports may be conducted.

2. Scope and Coverage of the Survey:

The Government of Kerala in their order No. G.O. MS. 238/78/ID dated 23-5-1978 have accorded sanction for the conduct of the traffic survey as preliminary to the setting up of an Integrated Air Cargo Complex in the state. They had also accorded sanction for the creation of the following posts for the conduct of the survey for a period of four months.

Research Officer	1
Statistical Officers	3
Research Assistant	1

The principal objective of the survey was to make a realistic assessment of the potential export/import traffic that would be diverted from Kerala as air Cargo direct to and from destinations abroad. The study would inter alia take into account the growth potential of various products and also identify the extent to which cargoes at present are getting diverted to the adjacent airports through surface transport in the absence of customs clearance facilities at the airports in the State. The period of the survey would be four months which would be devoted to intensive field investigation by contacting the actual exporters and importers throughout the State and the neighbouring districts of Tamilnadu which have also been included in the hinterland of the airports in the State. Taking into consideration the nature and importance of the study, the investigation was entrusted to officers of the rank of District Statistical Officers of the Bureau. In the first stage of the survey the exporters and importers in the State as well as in the neighbouring districts of Tamilnadu were listed out and personally contacted for the collection of data relating to exports and imports and possible diversion of the goods as air Cargo. Their views and suggestions regarding the setting up of the Air Cargo Complex were also recorded. In the second stage commercial institutions like the Chambers of Commerce, Commodity Boards, Government Offices, etc. were contacted by the Investigating Officers and the Officers from the Directorate of the Bureau for holding discussions in connection with the possibilities of setting up the Air Cargo Complex. The survey was started from 1st July 1978 and it came to a close by the end of October 1978.

3. Limitations of the Study:

It was programmed to contact and obtain information from every exporter-importer according to the lists of exporters and importers furnished by the Chambers of Commerce and other Commercial Institutions of the respective regions. But some of them have not furnished the relevant data of their respective concerns on the plea that their respective trade may not figure out in air Cargo diversions. Hence the investigations mainly covered exporters/importers whose trade has a place in air cargo diversion. A factor that stood in the way of arriving at precise estimates on the possibility of diversion of goods to air cargo is attributed to the noncommittal attitude on the part of certain concerns. They are of the view that diversions to air Cargo mostly depend upon the promotional freight rates offered by the airlines and incentives offered by the Government which will enable them to face world competition effectively. Yet another point which attracted the attention of the Investigating Officers is the traditional and continuing contacts and transactions taking place between trade circles here and those in other places like Bombay and Madras. The diversion of goods from these entanglements will have to be made even by state incentives when facilities are provided in the State itself under the Integrated Air Cargo Complex Scheme.

II. AERIAL HINDERLAND AND ITS ECONOMY

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For a proper understanding of the volume of air Cargo that would be generated from Kerala, the existing economic activity of the hinder lands of the inland airport at Cochin and the International airport at Trivandrum has to be considered. Apart from the whole State of Kerala comprising of eleven districts, the neighbouring districts of the State of Tamilnadu viz., Coimbatore, Madurai, Tirunelveli and Kanyakumari have also been considered to form the aerial hinderland of the two airports.

Situated at the Southwest corner of the Indian peninsula between 8° and 18' and 12° 48' north latitudes and 74° 52' and 77° 22' east longitudes, the State of Kerala, has many unique characteristics of its own when compared with any other State in India. It is one of the most densely populated States in India with a total population of 213.47 lakhs and a density of 549 per square k. m. according to 1971 census. Kerala occupies an area of 38864 sq. k. m. which is only 1.18 per cent of the total area of the Indian Union. The population of the State (1971 Census) at the same time accounts for 3.9 percent of the total population in India. The literacy percentage is also the highest in India with 60.16% as per 1971 census which is almost double the all India average of 29.32%.

The physical configuration of the State is also diversified with an undulating topography forming three natural regions viz. the high land, the midland and the lowland which is responsible for the diversity of the plant growth. The highland is most suited for the cultivation of plantation and high value cash crops like tea, coffee, rubber, cardamom, cloves etc. The midland is known for its diversity in cropping pattern with various crops like tapioca, coconut, arecanut, rubber, pepper, mango, jack, tamarind etc. The lowland is monopolised by crops like coconut and rice.

The State is gifted with a very long coastline of 580 k.m. which abounds in various marine products with tremendous export potential.

The State is also endowed with a heavy rainfall, warm humidity of atmosphere and a fairly uniform temperature throughout the year.

Agriculture is the chief occupation in Kerala. But the percentage to total population engaged in Agriculture is small in Kerala when compared with other States. The agricultural production in Kerala is also characterised by the predominance of commercial crops. Nearly 52% of gross area under cultivation is under perennial cash crops. Those high value cash crops including plantation crops are mostly feeding the export industry of Kerala.

The production of some of the important cash crops for two successive years is given below :

<i>Name of crops</i>	<i>Production in tonnes</i>	
	1975-76	1976-77
(1)	(2)	(3)
1. Pepper	24580	24497
2. Ginger	28840	25447
3. Turmeric (cured)	2608	2213
4. Cardamom	2050	1420
5. Banana	81273	81326
6. Other Plantains	313760	309283
7. Cashewnut	122360	87257
8. Tea	43264	41644
9. Coffee	14395	15030
10. Rubber	128969	139349
11. Coconut (in million nuts)	3439	3348

Source: Season & Crop Report 1975-76 & 1976-77.

Most of the above mentioned items have always occupied a sizable proportion of the export merchandise from the Agricultural sector of Kerala. Many of these products especially high value items like cardamom and other spices, oleoresins and other essential oils, vegetables, fruits, plantains and processed food items like pickles etc. can be exported by air from Kerala.

2. The livestock population of Kerala is sizable consisting of cattle, buffaloes, goats, pigs and poultry, as shown by the following figures:

Sl. No.		1966 Census	1972 Census
(1)	(2)	(3)	(4)
1.	Cattle:		
	Male over 3 years	519523	391594
	Female over 3 years	1219242	1300171
	Youngstock	1117962	1164555
	Total cattle	2856727	2856320
2.	Buffaloes:		
	Male over 3 years	253850	225729
	Female over 3 years	134770	155780
	Youngstock	82615	90238
	Total buffaloes	471235	471747
3.	Sheep and Goats	1200737	1477978
4.	Pigs	111928	129087
5.	Poultry—Total Birds	4641375	4936469

Kerala has a total cattle population of 2856320, buffalo heads of 471747, sheep and goat population of 1477978 as per 1972 census. The above figures are cited to illustrate the potentialities of export of bacon and other meat products from Kerala, both fresh and processed which could very well find a place in the air Cargo list from the State. Further the cattle population strengthens the tremendous scope for the development of leather industry in Kerala, which is at present very remotely developed. The estimated egg production stood around 960 million in 1975-76 the bulk of which can be exported from Kerala.

3. Fisheries:

Kerala is abundant in marine wealth. The estimated sea fish production stood at 4.21 lakhs tonnes (value Rs. 60 crores) in 1975 compared to 4.20 lakh tonnes (value Rs. 43 crores) in 1974. In 1976 the total fish production was 3.31 lakh tonnes. The principal marinespecies of Kerala are Oil Sardine, Mackerel, other fishes and prawns. Sea-food industry in Kerala has emerged as one of the major export oriented industries making a substantial contribution to the export effort of the country. Kerala accounted for 54 percent of the non-penicillin prawns (export varieties) and 61 percent of the oil sardine landed in the country in 1975.

4. Industrial background:

With her unparalleled position in the generation of hydro-electric energy, Kerala has developed a number of industrial ventures and has a promising potential to reach an advanced stage of industrial development. The State's power system has an energy potential of 4730 MKWH at present. The quantum of electrical energy generated in Kerala increased from 591 MKWH in 1960-61 to 3151 MKWH in 1976-77. The power position of the State is so promising that Kerala at present exports electric energy to the neighbouring States of Tamilnadu and Karnataka.

The pace of industrial development of the State is being accelerated because of the heavy involvement of the State Government in quick industrialisation programmes. The Kerala State Industrial Enterprises, which is a holding company of seven Government owned companies is engaged in programmes of diversified production and export marketing. Trivandrum Rubber Works, Kerala Ceramics, Kerala Electrical and Allied Engineering Company, Kerala Soaps and Oils, Kerala Drugs and Pharmaceuticals, the Kerala State Detergent and Chemicals are the subsidiary units, which have production potentialities for a diversified pattern of products, both for internal marketing as well as for export.

The Kerala State Industrial Development Corporation is a paramount organisation engaged in the promotion of large and medium industries in Kerala, not only for extending financial assistance to industrial units but by rendering all other forms of help including knowhow and technical expertise.

The Kerala State Electronic Development Corporation is a State owned pioneering organisation which has already launched the production of any array of sophisticated and precision toned equipments like television receivers, electronic calculators industrial electronic equipments etc. Of the 12 subsidiaries, 6 have already started production. The other 6 companies, Keltron Component complex, Keltron Magnetics, Keltron Registers, Dielecto Magnetics, Keltron power Devices and Keltron Rectifiers are at various stages of implementation. The Corporation produced 4059 television sets against the installed capacity of 5000 sets. Considering the increased demand for T. V. receivers, the Corporation has already applied for the expansion of the present capacity from 5000 to 20000 sets per annum. The production programmes of this organisation when fully implemented will create a strong base for the development of electronic industry of Kerala, which has tremendous export potential besides catering to the domestic demands.

The Kerala Agro-Industries Corporation, an organisation engaged in the development of agrobased industrial products and machinery has provided a strong impetus to the production of many agrobased products and agro-machinery. One of the subsidiary companies of the corporation, the meat products of India, has long range plans for the production and export of meat and allied products. Steps are also being taken to establish agro-industrial complexes based on pineapple, tapioca and spices under the Indo Bulgarian Joint Commission Programme. The corporation is also exploring new areas of operation like the setting up of a pesticide formulation unit, mechanical compost plants and fruits processing units.

The Small Industries Development Commissionerate, is making concerted efforts to accelerate the development of small scale industries in the State. The main emphasis is on the establishment of one growth centre in the form of mini-industrial estates in each Panchayat. The number of small scale industrial units registered with this commissionerate has increased to 10946 by the end of 1977.

The major public sector undertakings working in the State are Vikrom Sarabhai Space Centre, FACT, Cochin Ship Yard, Cochin Refineries, Hindustan Insecticides, Modern Bakeries, Hindustan Machine Tools, Indian Rare Earths, Hindustan Latex, Instrumentation Ltd., and Travancore Titanium Products.

The industrial sector in the State is dominated by traditional and agro-based industries like cashew, coir, handloom, oil mills, saw mills, beedi, fish processing etc. By setting up a number of corporations and Boards the State Government is vitalising these industries with all the possible efforts since these are employment-oriented industries. The total number of registered working factories in Kerala at the end of 1976 were 6921. Many of these factories are producing commodities meant for export. In this connection mention may be made about the handloom industry of Cannanore District, leather industry of Kozhikode, Cashew Industry of Quilon District etc.

The production value of some of the final industrial products manufactured by the different factories of Kerala as per Annual Survey of Industries 1973-74 are given below:

<i>Category</i>	<i>Value of produce Rs. in lakhs</i>
1. Slaughtering, preparation of meat etc.	11.01
2. Dairy products	46.00
3. Canning and preparation of fruits and vegetables	83.00
4. Canning, preservation and processing of fish and similar foods	377.25
5. Edible oils	1308.96
6. Tea processing	2190.9
7. Coffee processing	38.16
8. Cashew products	4873.55
9. Starch manufactures	171.8
10. Fruit products	0.74
11. Spices	7.09
12. Handloom manufactures	169.29
13. Knitting mill products	83.16
14. Coir products	994.36
15. Tanning and curing of leather	25.58
16. Allopathic Medicines	57.42
17. Ayurvedic preparations	52.00
18. Cutlery	1.5
19. Musical instruments	1.13
20. Engineering goods	3.00

Kerala has a fairly well developed net work of Transport and Communication with nearly 81600 Km. of road length, 773.64 Km. of broadgauge and 112.71 Km. metergauge railway lines, the major port of Cochin and 6 minor ports and two Airports at Cochin and Trivandrum. A thrust towards employment opportunities recently opened up in the Gulf countries has become one of the contributing factors in raising the status of the Trivandrum airport to an International airport.

The State is also well placed in the sphere of communication facilities like the telegraph and the telephone with a broad net work of S.T.D. routes.

5. Among the neighbouring districts of Tamilnadu that will form the areial hinderland of the airports in Kerala special mention may be made about the districts of Coimbatore and Madurai.

Coimbatore, the biggest District in Tamilnadu is a highly industrialised district and is second only to Madras. The important industries located in this District are textiles, textile machinery, electrical motors and pumps, Electronic goods, Aluminium vessels, handloom cloth, cement, leather, etc. Due to the great strides made by the Coimbatore District in textile industry it has earned the name of 'Manchester of South India'. Tirupur an important industrial centre in Coimbatore District is a major producer of cotton hosiery products. There are a number of factories extracting spices oils, oleroesins, etc. Once an Air Cargo Complex is started in Kerala, large volumes of high value cargo will be diverted to Kerala for airlifting, since airports in Kerala are much nearer to Coimbatore District, than the airports at Madras and Bangalore which have airlift facilities at present. There will be a promising quantum of imports also. The Coimbatore District is connected with Kerala by roads, rail and air mode of transports.

Madurai, another district of Tamilnadu that forms the areal hinderland to airports in Kerala is also an important industrial centre in Tamilnadu having a good number of spinning and weaving mills of wide repute like the Madura Goats and has a thriving handloom industry. The trade centres at Virudunagar and Bodinayackannur are important for the processing of cardamom. The district is also an important centre for vegetables of all kinds, fruits and flowers and jewellery that has good export potentialities. Even now many products like handloom cloth, readymade garments, fruits, vegetables and flowers etc., are being exported to various destinations abroad. The district is connected with Kerala by road, rail and air mode of transport.

The Districts of Kanyakumari and Thirunelveli though not industrially well developed, are important centres for the production of vegetables, marine products etc., which have good export potentialities and a good portion of these products are likely to be diverted to Kerala, provided airlifting facilities are provided. The Trivandrum-Thirunelveli railway line to be commissioned shortly will open up new possibilities of traffic in this area. The districts are also connected with Kerala by good roads.

A perusal of the economic activities of the aerial hinderland of Cochin and Trivandrum airports clearly shows that there is encouraging possibilities for diversion of substantial volume of export-import cargo if airlifting facilities are provided.

III. EXPORTS AND IMPORTS OF KERALA FROM AN AIRLIFT ANGLE

1. Kerala with her considerable contribution to the foreign exchange earnings to the nation occupies a prominent position in terms of her export trade when compared with other States in India. Exports from Kerala have increased from Rs. 125 crores in 1970-71 to Rs. 474.89 crores in 1977-78. The principal items of export were marine products (Rs. 90 crores), spices (Rs. 43 crores), cashew kernals (Rs. 136 crores), tea (Rs. 61 crores) and coffee (Rs. 34 crores) during 1976-77.

Total exports from Kerala from 1971-72 to 1977-78 are given below:—

Year	Total value of export (Rs. in crores)	Index of exports
1971-72	202.65	100
1972-73	202.66	100
1973-74	321.69	159
1974-75	310.17	153
1975-76	295.00	146
1976-77	397.14	196
1977-78	474.89 (provisional)	234

Though exports from Kerala exhibits a varying trend over a period of years, her contribution to the export front is sizable. When exports from Kerala is viewed from an air cargo angle, many of the items that constitute the bulk have practically no scope for air lifting since they are voluminous and less unit value items. In order to assess the possibilities of diversion of goods as air cargo from the existing export list an attempt is made in the tables (furnished in the Appendix) to locate those items that have scope as air cargo and their traditional flow to various destinations in the world for a period of 6 years. The entire world market has been divided into seven groups, each group comprising of a bunch of nations in a particular zone (see Appendix I). From a broad export list consisting of more than 60 items 15 were selected for consideration

Cardamom is a high value item which has got good scope for diversion to air cargo. Out of an average export of Rs. 334 lakhs worth of cardamom directly exported from Kerala, the bulk is going to middle-east and communist countries especially to U.S.S.R. The scope for the export of this commodity from Kerala as air cargo is promising. At present only one third of the total quantity of cardamom produced is being shipped from Kerala while the rest goes to Bombay for export (see next chapter). If adequate shipping facilities are offered in Kerala to important consuming markets the entire cardamom could be exported from Kerala itself.

Kerala is a major exporter of cashew products and is earning very valuable foreign exchange for the country. Because of the entrance of many African countries in this field, the cashew export of Kerala is facing keen competition abroad. So also cashew products are exported in bulk and its value is not sufficiently high when compared with its volume. Hence the scope of this commodity for diversion as air cargo is very limited. But consumer packings and commercial samples can be exported by air. The major markets for cashew products are America and the communist countries.

The traditional markets for coffee products of Kerala are E.E.C. Countries, Communist Countries and America. But since this is also a bulk product having less unit value the scope for air lifts is limited. But emergency bookings, consumer packings, commercial samples and instant coffee etc., can be airlifted from Kerala.

The major export of chemicals and chemical preparations have been to Japan and the Far-east, middle-east and E.E.C. countries. High value items of chemical products can be airlifted.

In India, Kerala enjoys a monopoly position in the export of coir products and the major markets are the E.E.C. countries and America. Because of the specific peculiarities of this cargo which is a comparatively low value item, it cannot sustain the airfreight. On the other hand commercial samples, gifts and presentation parcels, etc., can be airlifted.

Cotton manufactures have been mainly exported to E.E.C. countries (52.87%) and America (18.03%) from the shores of Kerala. This will include products like ready made garments and other made-ups for which there is a definite possibility for diversion as air Cargo.

The average annual export of drugs and medicines from Kerala is only (Rs. 44.41 lakhs). The entire quantity can be considered for airlifting, since these are mostly high value items. The main markets are E.E.C. countries (52.25%) and Japan and the Far-east (23.69%).

Marine products form one of the prominent items of export from Kerala. Among the various types of marine products exported, the entire high value items can be airlifted. The consuming markets are in Japan and the Far-east (52.16%) and America (34.74%).

A sizable proportion of the fruit products and vegetables exported from Kerala can be diverted for airlifting. These items were mainly flowing to communist countries (47.72%), E. E. C. countries (30.46%) and middle east (16.30%).

Handicrafts of different nature and value can be exported by air, since they are mostly high value items and need careful handling. The traditional buyers have been E.E.C. countries including W. Europe (47.18%), Japan and the Far East (26.42%) and American countries (16.61%).

The export of leather and leather manufactures have been very low from Kerala, average annual exports being of the order of (Rs. 14.74 lakhs) since leather industry is poorly developed here. The main exports have been raw materials (hides and skins). But whatever finished products of leather now exported from Kerala can be completely diverted for airlifting. The main markets are communist countries, E.E.C. countries and U.S.A.

Pepper is a bulky item of export which does not have much scope for airlifting. But Pepper oil and green pepper which are high value items can be completely diverted for airlifting. The major markets are communist countries especially U.S.S.R., American countries and E.E.C. including Western Europe.

Tea is a major item of export from Kerala but there is not much scope for airlifting since its low unit value cannot sustain the airfreight. But commercial sample and instant tea can possibly be airlifted. The markets are European countries, U.S.S.R., America and the Middle East.

Wood items as such cannot be airlifted. But sawn sizes and finished components of valuable woods like rose wood, teak wood etc., can be airlifted.

An examination of the present exports of Kerala and their traditional flow to various destinations reveal that many items can be easily diverted for airlifting whereas many others do not come in the picture at all, owing to the specific nature of these items like bulkiness and comparatively low cost.

2. Imports

Imports into the ports of Kerala from 1971-72 to 1977-78 are given below:—

<i>Year</i>	<i>Total value of imports (Rs. in crores)</i>	<i>Index of imports</i>
1971-72	103.00	100
1972-73	126.37	123
1973-74	182.64	177
1974-75	271.81	264
1975-76	299.34	291
1976-77	384.00	373
1977-78	373.22 (provisional)	362

It is clear that the total value of imports into the ports of Kerala exhibits a steadily increasing trend over the years. The major items of imports were petroleum products, cashew, paddy, rice and other grains, raw materials, chemicals etc. Most of the products of import into Kerala have only limited scope for diversion to air cargo since most of them are low value and bulk items. The import list is of a very broad nature comprising many sub categories which have scope for diversion to air cargo. For example, those items which have high unit value but requiring only limited space, like chemicals, drugs and medicines, cutlery, precision-equipments, fruits and vegetables, spare parts of machinery, generator bearings, laboratory equipments, books and research publications, electronic components etc., have scope for imports by air.

The trend in the import of some of the selected items into Kerala from various destinations for a period of 6 years is given (in Appendix I-B). Among 40 items examined only 5 items of import including sundries from the seven zones (see Appendix I) were seen to have the possibility of diversion to air cargo.

Most of the high value chemicals and chemical preparations imported mainly from E.E.C countries including West Europe (53.64%), Japan and Far East (21.65) and American countries (20.34%) have the possibilities to be considered for air import.

Instruments, apparatus and appliances can also be imported by air. These items are mainly imported from Japan, communist countriss like U.S.S.R. and from U.S.A.

Oils imported into Kerala are vegetable oils like soyabean oil which cannot subscribe to air-lifting because of its comparatively low cost. It is mainly imported from U.S.A.

Textile goods imported are mainly low valued items especially yarn. But all the finished goods imported can be airlifted. It is mainly imported from E.E.C. countries (44.55%), America (27.75%) and Japan (25.26%).

Among the items included in the sundries list all those items that are high valued can be diverted to air import.

Other items that can be included in the list are Rubber manufactures, machine parts etc.

3. Existing air cargo traffic in Kerala

It is interesting to note that even without any facilities like warehousing, customs clearance and carrying capacity, substantial increase in the volume of air cargo traffic have taken place from Cochin in recent years as explained by the following tables.

Year	Export by air (Rs. in lakhs)	Import by air (Rs. in lakhs)
1973-74	2.29	36.57
1974-75	2.58	46.41
1975-76	12.51	68.18
1976-77	54.27	93.17

Source: Cochin Chamber of Commerce & Industry.

4. From the table it is clear that both exports and imports by air in Kerala have increased tremendously during a period of four years. Exports have increased from Rs. 2.29 lakhs in 1973-74 to Rs. 54.27 lakhs in 1976-77. Though the total volume of exports is less, trend in increase is very remarkable. The main items of exports were Cardamom, Chemicals, Cashew Kernals, Coir products (samples), Cotton manufactures, Handicrafts, Drugs and Medicines, Sandalwood Oil and other Vegetable Oils, Oleoresine etc. Similarly imports have also increased considerably during the period. Imports have increased from Rs. 36.57 lakhs in 1973-74 to Rs. 93.17 lakhs in 1976-77. The major items imported were chemicals and chemical preparation, drugs and medicines, instruments, apparatus, appliances, machinery and parts, plastic-materials, vehicles and parts thereof etc. Thus, even without any formal arrangements for airlifting of cargo from and into Kerala, the trading community and other organisations have increasingly utilised the existing flights for the movement of cargo. This clearly indicates that, provided adequate facilities are given, the exporters/importers of Kerala will utilise them to the full extent which will boost up the Airborne trade of Kerala.

IV. AIR CARGO POTENTIAL OF KERALA

1. A correct assessment of the volume of cargo likely to be diverted for airlifting, from Kerala and from the neighbouring districts of Tamilnadu which form the aerial hinterland to the air ports in the State, once an air cargo complex is set up in Kerala, cannot be made by using secondary information alone. Hence it was decided to contact most of the leading exporters/importers of the State and of the relevant districts of Tamilnadu to assess the extent of cargo that may be diverted in view of the setting up of the integrated Air Cargo Complex in Kerala. The actual exporters/importers contacted were confined to the major industries of Kerala like marine products, coir products, cashew, tea, coffee, timber, handloom, export of spices, oleoresins, textile manufactures, vegetables, fruits, ayurvedic medicines, pharmaceuticals, processed food items, engineering goods etc. Besides, in order to get an overall picture of the cargo potential, a number of commercial organisations and institutions like the chambers of commerce, merchant associations, export houses, Governmental Institutions like the Commodity Boards, productivity councils etc., were contacted for detailed discussions. So also various offices connected with the export/import trade were also approached for their considered views and valuable suggestions in the matter. Out of the nearly 1000 exporters/importers identified, nearly 50% were dealing in products like cashew, coir, marine and timber products. Nearly 80% of the exporters were located in the central and northern parts of Kerala and Coimbatore District of Tamilnadu where substantial volume of export-based industries are located. Nearly 40% of the total exporters/importers contacted did not furnish any information.

2. Export potential of existing items

The export potential of existing items in the aerial hinterland of the two airports is assessed on the basis of the information furnished by the exporting community and other organisations.

2.1 Spices, especially cardamom

Kerala is a major producer of spices which accounted for about 46 per cent of the export of spices from India in terms of quantity and 62 per cent in terms of value during 1976-77. Among the spices produced in Kerala, Cardamom occupies a supreme position in terms of value. The foreign exchange earned from the export of cardamom during 1977-78 exceeded Rs. 48 crores. The total production of Cardamom in Kerala stood at 2900 M. T. in 1977-78 and it is valued at Rs. 48 crores. It is very interesting at the same time to note that out of the total quantity of cardamom produced only one-third is being exported from Kerala direct while the rest is mostly taken over to the port of Bombay. The main reason for this leakage of the valuable spice to Bombay is due to the limited export facilities available in Kerala to the desired destinations abroad.

The main processing centres of cardamom are at present located at Bodinaikannoor and Virudunagar of Tamilnadu. From these centres the processed and graded cardamom is being sent to Bombay by surface transport and from there it is shipped to various destinations abroad.

Nearly 2/3 of the cardamom produced in Kerala is being exported in this way by middlemen in the absence of shipping facilities in Kerala. If sufficient facilities are provided for shipment from Kerala to various destinations abroad the entire cardamom produced in Kerala can be exported from the State itself.

Cardamom being a low volume and high priced item, the scope for airlifting from Kerala is in fact immense and vast. In their note to Airlines authorities entitled 'concessive Air freight Rates for Cardamom' the cardamom Board has made an earnest plea to the Airlines to accord sufficient airlifting facilities for cardamom produced in Kerala by offering favourable as well as promotional air freight rates:

Most of the exporters of cardamom are located in Tamilnadu and the response from a good number of them was very poor regarding the extent of diversion of cardamom to Kerala for airlift. But on the basis of the information furnished by the leading exporters in Kerala as well as the cardamom Board, tentative estimates of the quantity and value of cardamom likely to be diverted for airlifting for the next three years is given below:

Year	Quantity	(Value Rs. in Crores)
1979-80	600 M.T.	12
1980-81	700 M.T.	14
1981-82	800 M.T.	16

But once full fledged airtlifting facilities from Kerala with promotional freight rates by the Airlines, and attractive cash incentives for exporters by the Government are offered, the entire cardamom produced can be airlifted from Kerala which may go even upto 2000 tonnes a year. Other spices like green pepper, cloves etc. will also be airlifted from Kerala besides cardamom.

The most important market for Cardamom is the Middle East countries especially Arabic speaking world. It is said that "the sun does not set in the Arab world without coffee, without Indian Cardamom - the queen of spices in India." Indian Cardamom has become an indispensable part of life in the Arab World. The major reasons for Cardamom being sent through Bombay is that there is now no adequate shipping facilities direct from Kerala to the Middle-East countries whereas in Bombay, the facilities are often varied and vast. But the starting of regular direct flights from Kerala to the MiddleEast countries with enormous cargo carrying capacity has opened up new horizons for the shipment of cardamom directly from Kerala. But the fact that it may take some time to break the traditional business contacts and ties and agency work which have been established hitherto cannot be ruled out. This requires earnest action from the authorities for the feed back of information regarding all the advantages of airlifting from Kerala including the promotional freight rates and other export incentives offered etc. to the actual producers, exporters and business community at large through the commodity Boards, Chambers of Commerce and other media.

East European countries like U.S.S.R., G.D.R., Czech, Bulgaria etc. rank next to the middle East in the purchase of cardamom. E.E.C. countries and East Asian countries especially Japan and U.S.A. are the other major markets for cardamom.

2.2. Oleoresins of spices, spices oils and other essential oils:

Oleoresins of spices are the extracts of spices which contain all the active flavouring principles of the original spice. These active ingredients are extracted by solvents and the solvents are removed by suitable means to get the product which possesses all the requirements for flavouring. Spices oils are ususally extracted by steam distillation. Oils are extracted here from cardamom, ginger, pepper, Amise, Cinnamon and Cinnamon leaf, Garlic etc. and oleoresins are extracted from ginger, Pepper, Capsicum etc.

Oils and Oleoresins are used in foreign countries for food flavouring particularly by large scale food and flavouring industries. They are convenient to use, to store, to maintain uniform flavour characteristics and to eliminate microbial contaminations associated with using raw spices. They are used in the following industries:

1. Meat canning
2. Sauce
3. Food processing
4. Soft drinks
5. Pharmaceuticals
6. Perfumery and soap
7. Tobacco
8. Confectionary
9. Bakery

Oleoresins of spices and spices oils are having very high demand throughout the world, especially in the Middle-East, East Eruopean Countries, East Asian Countries and in U.S.A., Canada etc. These are high value items and can easily subscribe to the airfreight. Similarly essential oils like sandalwood oil, vetivert oil and other essential oils can be airlifted from Kerala. Producers and exporters of the above products are mainly located in Coimbatore District and in central and northern Kerala. At present bulk of these products are exported from Bombay both by sea and air, in the absence of shipping facilities in Kerala. The estimated export of oleoresins of spices, spices oils and other essential oils for three years are given below:

<i>Year</i>	<i>Quantity M.T.</i>	<i>Value in crores</i>
1979-80	150	4.50
1980-81	200	6.00
1981-82	250	8.00

2.3 Marine Products:

With her abundant sea wealth, Kerala provides an excellent base for the export of marine products to various destinations abroad. Near about 100 marine exporters were contacted throughout the State, whose total annual exports come to nearly Rs.55 crores, and they expressed the possibility that 25% of their exports can be easily diverted as air Cargo. Marine products range in quality from very high value to very low value items and the former items can be airlifted. These include frozen shrimps, canned shrimps, prawns, and other high value items like pomfret.

The estimated quantity and value of marine products that will be available for airlifting for three years is given below:

<i>Year</i>	<i>Quantity in M.T.</i>	<i>Value in crores</i>
1979-80	2700	8
1980-81	3400	9
1981-82	4000	10

Since marine products are highly competitive in the world market promotional freights must be offered for airlifting of marine products since the present steamer rates are very low. Again Government should give more subsidies for promotion of export by air. Reefer containers/insulated containers should be provided in the aircrafts and adequate cold storage facilities should be arranged in the Air Cargo Complex for keeping the marine products that are perishable. The main markets for marine products are U.S.A., Japan and European countries. The entire potential Gulf region remains to be exploited. The marine exporters are concentrated in and around Cochin, Alleppey, Quilon etc.

2.4 Handicrafts:

Handicrafts of various kinds like wood carvings, brassware, horn carvings, curios, screwpine, fibre, antiques etc., can be airlifted from Kerala since majority of these are high value and low volume items to be handled with care. There is excessive demand for these items in western countries during festival seasons. State undertakings like the Handicrafts Development Corporation of Kerala and a lot of other private concerns spread throughout Kerala will regularly subscribe to the facilities of airlifting by sending promising volume of this cargo. In the absence of shipping facilities in Kerala to important destinations, a substantial volume of this cargo is at present being transported either to Madras or to Bombay.

The estimated value of handicrafts that will be available for airlifting in Kerala in the initial stages will be as follows:

<i>Year</i>	<i>Value in crores</i>
1979-80	5.00 crores
1980-81	5.50 crores
1981-82	6.00 crores

The main markets for handicrafts are Germany, Japan, U.S.A., U.K., Italy, Middle-East etc.

2.5 Textile manufactures including made-ups and handloom cloth:

Textile manufactures including textile made-ups and handloom cloths like Handloom sarees, lunkies, kerchiefs, produced in Kerala have tremendous potential for airlifting. Handloom cloths are mostly fashionable items and other modes of transport cannot cater to the demand and preference fluctuations in foreign markets. Even now handloom manufactures like ready-made garments worth Rs.2 crores is taken to Madras for airlifting in the absence of such facilities in Kerala. Bulk of handloom items produced in Kerala is in Cannanore District. Estimated value of textile manufactures available for airlifting for three years is given below:

<i>Year</i>	<i>Value (Rs.in crores)</i>
1979-80	2.0 crores
1980-81	2.5 crores
1981-82	2.5 crores

The main markets for these items are Europe, U.S.A., Middle-East and East Asia.

2.6 Cotton Hosieries:

Cotton hosieries of various forms produced especially in Tirupur of Coimbatore District of Tamilnadu can be easily diverted to Kerala once airlifting facilities are provided here. Even now cotton hosiery articles worth Rs.6 crores from Coimbatore District are being transported to Bombay and Madras for airlifting. These items are fashion oriented and cannot wait to be transported by ship. The trade circles contacted feel that the potentialities of export of these articles are such that it can go up to the level of Rs. 100 crores which will necessarily boost up airlifting from Kerala. However a tentative estimate of the value of Cotton hosieries available for airlifting in the initial stages is given below:

<i>Year</i>	<i>Value (Rs. in crores)</i>
1979-80	3.00 crores
1980-81	4.00 crores
1981-82	4.50 crores

The main markets for cotton hosieries are European and American countries and the Middle-East.

2.7 Instant Tea and Coffee:

Tea and Coffee as such are actually bulk cargo which requires more space and when compared with their weight, these are comparatively low priced products that are facing keen competition in the world markets. But highly processed forms of these products like instant tea and instant coffee can be economically airlifted from Kerala. The estimated value of instant tea and coffee that can be airlifted from Kerala is given below:

<i>Year</i>	<i>Value (Rs.in crores)</i>
1979-80	2.0 crores
1980-81	2.5 crores
1981-82	2.5 crores

The main markets are U.K., U.S.A., Russia and Middle-East.

2.8 Tinned Meat, Fresh, Frozen Meat and Eggs:

Products like fresh frozen meat, tinned meat, fresh eggs etc. are in very high demand in the Middle East countries and in some European markets. Even now there are orders for the export of more than 2 tonnes of meat every week to Dubai. The Kerala State Agro-Industries Corporation Ltd., is actively engaged in exploring the possibility of sending meat products by air. One bacon factory is functioning at Koothattukulam while another is being set up at Chalakudi, which may have a capacity of processing meat of 200 Buffaloes a day. It is known that Denmark has already been engaged in a contract with the Corporation to buy the entire produce for 6 years. This will be a promising item of Air Cargo from Kerala. Indian meat is lean (less fat content) and is very much preferred in European Countries. Similarly eggs are in demand in Middle-East countries but suitable containers have to be designed to avoid breakage to a sizable extent. The production of eggs in Kerala is sizable and the potentialities of export by air is also encouraging and promising with suitable containers.

The estimated quantity and value of processed meat products that can be airlifted from Kerala are given below:

<i>Year</i>	<i>Quantity in M.T.</i>	<i>Value (Rs.in crores)</i>
1979-80	3000	5.00 crores
1980-81	3500	5.75 crores
1981-82	5000	6.75 crores

The export of eggs may be upto Rs.15 lakhs a year.

2.9 Decorated Hukkas:

Decorated Hukkas are mainly manufactured in Calicut. Even now Hukkas produced in Kerala are being airlifted from Bombay. It is a high value item costing nearly Rs.300 per Hukka and is in very high demand in Middle-East countries. The estimated value of Hukkas that can be airlifted from Kerala in the initial stages will be nearly for Rs.20 lakhs.

2.10 Electronics items:

There is good potential for airlifting electronic items from Kerala. The Kerala State Electronic Development Corporation is engaged in the production of a spectrum of electronic items like calculators, radios, T.V. sets etc. and is fast expanding in all electronic fields. Similarly the U.M.S. Radio, Coimbatore and other concerns are big manufacturers of electronic items and they will divert their goods once airlifting facilities are developed in Kerala.

The estimated value of electronic items for probable export by air is as follows:

<i>Year</i>	<i>Value</i>
1979-80	2.00 crores
1980-81	2.50 crores
1981-82	3.00 crores

2.11 Furniture Components and wood items:

Furniture components, sawn sizes etc. of rose wood can be airlifted from Kerala. Different sawn sizes of rose wood, teak wood and other costly woods are exported for the manufacture of musical and other costly instruments. Wooden furniture and furniture components of various types have very high potential of export from Kerala to the Middle-East in view of the heavy construction works taking place there. The estimated value of such wood items available for airlifting will be as follows:

<i>Year</i>	<i>Value (Rs.in crores)</i>
1979-80	3.00 crores
1980-81	3.50 crores
1981-82	4.00 crores

2.12 Processed Food Items:

Many processed food items like pickles, jams, jellies, juice, chips, snacks, pappadam etc. can be airlifted from Kerala. At present most of these items are shipped by sea, in the absence of alternate facilities. The Agro-Industries Corporation has very big schemes for the export of chips and juices. The District of Madurai in Tamilnadu is a promising centre for the diversion of processed foods to Kerala for airlifting. The estimated value of such items will come to nearly Re.1 crore which may go up in future.

2.13 Vegetables and Fruits and Flowers:

There is very much scope for the export of these items to various destinations by air. The high value vegetables produced in the neighbouring districts of Tamilnadu will be diverted to Kerala. Even without much facilities vegetables and fruits like carrot, cabbage, beans, beet-root, orange, grapes etc. worth nearly Rs.1 lakh was exported from Trivandrum during 1976-77 to Malee islands alone. There is promising orders for the export of these items for middle east countries. The estimated value of fruits and vegetables in the initial stages will be for Rs. 0.50 crores which may progressively go up to 2 crores per year. The ban imposed on the export of vegetable items by the Government of India has to be lifted.

2.14 Ayurvedic Medicines, drugs pharmaceuticals and toilet preparations:

Ayurvedic medical preparations, medicinal herb, toilet preparations etc. can be airlifted from Kerala since a number of firms of world-wide repute are now functioning in Kerala in these lines.

The value of such articles available for airlifting from Kerala is estimated at Rs.0.15 crores (on an average).

2.15 Sundries:

In addition to the above mentioned items a list of other items not covered above like consumer packings and samples of cashew kernels, high value coir products and samples, leather goods, cycle spares and chains, industrial chains and commercial samples of all items of export will come up in substantial quantity for airlifting. The value of all such miscellaneous items is roughly estimated at Rs.0.50 crores (on an average).

The setting up of the Air Cargo Complex in the State itself will provide sufficient incentive for the development of many industries in Kerala. In this connection, the possibility of developing leather industry is worth mentioning. Now the bulk of the raw materials (hides and skins) produced in Kerala is being sent to Tamilnadu for tanning and other processing and is exported from Madras Air Cargo Complex in the form of finished leather. It is worth mentioning that 73% of the total export merchandise going through Madras Air Cargo Complex is finished leather and leather goods. Once air lifting facilities are provided in Kerala, it will provide sufficient incentive to the development of leather industry in Kerala. Considering the cattle population and the slaughtering done in Kerala together with the incoming industries for processed meat the possibility of setting up tanneries and factories for manufacture of finished leather is very bright, which may boost up the air export trade to unimaginable levels.

3. From the foregoing analysis it is clear that the air cargo available for export from Kerala by the year 1979-80 can be reasonably estimated at Rs. 48.00 crores. The break up and pojections are presented in the form of a table at the end of this chapter.

As regards the traffic potential in tonnage, only a very crude approximation is possible because of the different weight-value relationships of the different items. Moreover there will be considerable dichotomy between weight and value of the cargo. To present a crude form of estimate, the traffic potential of export cargo in tonnage to be available in Kerala is likely to be nearly 7400 M. T. in 1979-80, 9500, M. T. in 19780-81 and 11600 M.T. in 1981-82.

4 Imports into Kerala:

Although Kerala is one of the industrially backward states in India, it has to its credit some of the prominent public sector undertakings. Some of them are:

1. The Vikram Sarabhai Space Research Centre.
2. The Cochin Shipyard Ltd.
3. The Fertilizers and Chemicals of Travancore
4. The Hindustan Machine Tools
6. The Cochin Oil Refineries etc.

Apart from the above there are a number of State Government and Private Sector undertakings that are engaged in the production of sophisticated equipments and precision articles. The Kerala State Electricity Board, The Kerala State Transport Corporation, The Agro-Industries Corporation, The Kerala State Electronic Development Corporation are some of the major State Government undertakings. Again there are a number of educational and research institutions and other centres of advanced learning and research.

Almost all these organisations have varying degrees of import requirements and is at present facing a lot of difficulties because of the absence of adequate facilities of import. Since the Government are actively involved in massive industrialisation programmes, many of the newly coming up industries are having varyig degrees of import requirements

Eventhough item-wise estimates of imports cannot be given, the total value of imports that are likely to be done by air for the three years is given below:

<i>Year</i>	<i>Estimated value of import Rs.in lakhs</i>
1979-80	150
1980-81	200
1981-82	500

It must be remembered that even without much facilities of imports by air the value of imports by air has increased from Rs. 36.57 lakhs in 1973-74 to Rs. 93.16 lakhs in 1976-77. The major items that will be imported by air are:

1. Chemicals and chemical preparations
2. Drugs and medicines
3. Instruments, apparatus and appliances
4. Machinery and parts
5. Paper and paste board
6. Books and periodicals
7. Precision equipments
8. Metals, minerals and ores, etc.

Estimated Exports by air from Kerala

Item	1979-80		1980-81		1981-82	
	Quantity M.T.	Value Rs. in crores	Quantity M.T.	Value Rs. in crores	Quantity M.T.	Value Rs. in crores
(1)	(2)	(3)	(4)	(5)	(6)	(7)
1. Cardamom	600	12.00	700	14.00	800	16.00
2. Oleoresines of spices etc.	150	3.00	200	4.00	250	5.50
3. Marine Producets	2700	8.00	3400	9.00	4000	10.00
4. Handicrafts	..	5.00	..	5.50	..	6.00
5. Textiles manufactures	..	2.00	..	2.50	..	2.50
6. Cotton Hosieries	..	3.00	..	4.00	..	4.50
7. Instant tea & instant coffee	..	2.00	..	2.50	..	2.50
8. Tinned, fresh & frozen meat	3000	5.00	3500	5.75	5000	6.75
9. Decorated Hukka	..	0.20	..	0.50	..	1.00
10. Electronic Items	..	2.00	..	2.50	..	3.00
11. Furniture components	..	3.00	..	3.50	..	4.00
12. Processed foods	..	1.00	..	1.50	..	1.75
13. Vegetables & fruits	..	0.50	..	0.75	..	1.00
14. Ayurvedic Medicines	..	0.10	..	0.15	..	0.25
15. Sundries	..	0.20	..	0.50	..	0.75
16. Essential oils like sandal-wood oil, vettivert oil	..	1.00	..	2.00	..	2.00
Total		48.00	..	58.65	..	68.00

V. LOCATION OF THE AIR CARGO COMPLEX

1. Kerala at present has two airports. One is located at Cochin, which is the commercial centre of Kerala. This is an inland Airport situated on the west coast of the Arabian Sea. It is a major sea port serving not only the Kerala State, but also the adjoining Districts of Tamilnadu like Coimbatore. The port dominates in all the transport activities in Kerala and the tonnage handled in 1976-77 crossed the 47 lakh tonnes mark.

The other air port is in Trivandrum which is also located at the west coast of Arabian Sea. Trivandrum is the Capital City of Kerala and a prominent place of Tourist attraction. The nearby Kovalam beach is developing into an international tourist centre and Cape Comorin, lying at a distance of 87 KM. south east of Trivandrum is yet another place of great tourist attraction. Trivandrum airport was originally an inland airport. But consequent on the enormous and regular flow of passengers from Kerala to Foreign Countries especially to the middle east for securing jobs, Trivandrum has already developed into an international airport with considerable increase in carrying capacity.

2. The "SCOPE AIR" meeting has originally suggested to examine the feasibility of the setting up of an integrated Air Cargo Complex at Cochin and later suggested to examine the possibility of setting up the Complex at Trivandrum also.

For the setting up of an Integrated Air Cargo Complex in an airport some basic conditions must be satisfied.

The first is the cargo justification. Cargo both for international and inland destinations should arrive at the complex in sufficient quantity, for the smooth functioning of the Air Cargo Complex.

Secondly there is the Technical justification. There must be sufficient carrying capacity so as to enable the regular movement of cargo to the desired destinations without creating backlog at the complex.

Regarding Cargo justification Cochin has a superior position because of its inbuilt trade concentration and other infrastructure facilities available because of the major sea port of Cochin. Cochin is easily accessible to the Central and Northern Kerala and the neighbouring Coimbatore District of Tamilnadu where substantial volume of economic activity is taking place. Trivandrum is accessible to the Southern Kerala and the neighbouring Madurai, Kanyakumari Districts of Tamilnadu. Of the total exporters/importers contacted within the hinterland of the two airports, more than 60% preferred Cochin for setting up of the complex.

For the setting up of an Integrated air Cargo Complex at Cochin the following factors must be borne in mind.

1. The cargo carrying capacity of Air Crafts landing at Cochin is rather limited since they are smaller air crafts like the Avro.

2. The airport is under the control of the Naval Authorities and is therefore considered a defence installation. The operation of the air Cargo Complex at present if set up and the prospects of future expansion primarily depends upon the views and concurrence of the defence authorities.

3. The runway at the airport at present is not large enough to accommodate bigger aircrafts like the 737, 707 and the Air bus which is necessary to increase the cargo carrying capacity for the successful operation of the air Cargo Complex. There is a proposal to enlarge the runway so that the 737 plane may land by March or April in 1979. Still the prospects of increasing the carrying capacity of Cochin is bleak.

Trivandrum is a civilian airport which is capable of accepting bigger aircrafts. There is availability of regular services with enough cargo carrying capacity from Trivandrum to various inland and international destinations. The air bus and the 737 are operated daily. There is a proposal to operate an air bus shortly direct to the middle east via. Bombay without change of aircraft of passengers which may add to the cargo capacity direct to the middle east to a considerable extent. Enough space is also available near the airport for the construction of the complex building with provisions to give godowns to important exporters/importers. Trivandrum is also connected with all other parts of the State and the adjoining districts of Tamilnadu by roads and rail. At both the centres (Cochin & Trivandrum) no specific cargo originates as such.

Present air services operated at Cochin and Trivandrum with details of cargo carrying capacity are furnished below:

PROFORMA I

Present air services particulars

<i>Air lines</i>	<i>Flight No. & Code</i>	<i>Type of air craft and route</i>	<i>Total carrying capacity (in Kgs.)</i>	<i>Available cargo carrying capacity (after excluding capacity reserved for baggage (Kg.))</i>	<i>Days</i>	<i>Remarks</i>
(1)	(2)	(3)	(4)	(5)	(6)	(7)
COCHIN						
Indian Air-lines	K.566	AVRO-MS.748 (Cochin-Coimbatore-Bangalore-Madras)	1000 Kgs.	350 Kg.	Daily	..
"	K.538	AVRO-Cochin-Madras	do.	do.	5 days per week only	
"	K.162	AVRO-Cochin-Madras	do.	do.	do.	
"	K.166	AVRO-Cochin-Bombay	do.	do.	do.	
"	K.506	AVRO-Cochin-Trivandrum	do.	do.	do.	
"	K.504	AVRO-Cochin-Coimbatore-Bangalore-Madras	do.	do.	do.	

PROFORMA II

TRIVANDRUM

Indian Airlines	K.168	Air Bus A.300 B2 Trivandrum/Bombay	Approximately 15000 Kgs. per flight including luggage plus 278 passengers	App. 1200 Kgs.	Daily	Passenger cum-Cargo version.
"	K.505	AVRO-Trivandrum Cochin/Coimbatore/Bangalore	App. 0200 Kgs. plus 48 passengers	App. 800 Kgs.	do.	do.
"	K.507	B.737 Trivandrum/Colombo/Malee	App. 6000 Kgs. plus 122 passengers	App. 3000 Kgs.	2 days in a week	do.
"	K.145	AVRO-Trivandrum Madurai/Madras	Same as K.505	App. 800 Kgs.	2 days	do.
"	K.530	B.737-Trivandrum/Madras	App. 8000 Kgs.	App. 3000 Kgs.	Daily	do.
"	IC. 563	AVRO-Trivandrum/Malee	App. 1000 Kgs. plus 48 passengers	App. 350 Kgs.		..
Air-India	A.1843	707-Trivandrum/Dubai	27000 Kg.	3000 Kgs.	Once in a week	..
"	A.1877	707- Trivandrum/Dubai	27000 Kgs.	3000 Kgs.	do.	..
"		707-Trivandrum/Abudhabi-Kuwait	27000 Kgs.	3000 Kgs.	do.	..

The air service schedule clearly shows that the Cargo carrying capacity ex-Cochin is negligible when compared to Trivandrum. The Cargo carrying capacity ex-cochin works out to below 2 metric tonnes daily on an average while the same in Trivandrum comes to nearly about 17 metric tonnes a day (average).

Again the capacity of air crafts operated from Trivandrum to important destinations is worth mentioning. Whereas the cargo capacity of an air craft from Cochin to an important inland destination like Bombay is limited up to 350 Kgs. per flight, the same in Trivandrum comes to about 12 M.T. per flight per day. Similarly, air-crafts with sufficient carrying capacity is now being regularly operated from Trivandrum to international destinations like Middle East countries, Sri Lanka, Malee islands etc.

Taking into account of all the above factors, it is desirable that the proposed Integrated Air Cargo Complex for the State at present may be set up at Trivandrum. The cargo arriving now at Cochin can be routed to Trivandrum by surface transport, truck or rail.

The limited carrying capacity ex-cochin and the fact that Cochin airport is under the Naval authorities are not conducive to the operation of the air Cargo Complex, and its future expansion. The question of setting up a complex at Cochin area may be taken up when facilities occur for the landing of bigger-aircrafts, increasing air cargo carrying capacity together with sufficient space for the construction of godown or warehouses which may lead to the thinking of the construction of a new airport.

3. Export and Import facilities required to be introduced at the proposed integrated Air Cargo Complex in Kerala:

At present there are no customs clearance facilities at Trivandrum airport. The fact that cargo for international destinations is not moving from Trivandrum is purely because of this. But once the air Cargo Complex is set up, it should have the permission to handle all such products which are expected to arrive at the complex and facilities must be there for clearance. Hence prior to the functioning of the complex customs clearance declarations have to be obtained for all the expected arrivals (items). The possible important arrivals are noted below:

1. Commercial samples of everything
2. Gift parcels
3. Unaccompanied baggage both incoming and outgoing
4. Tender documents
5. Spices of all kinds like cardamom, pepper, cloves, ginger, turmeric, garlic, etc. and dehydrated spices.
6. Spices oil of all kinds, oleoresins, etc.
7. Essential oils like sandalwood oils, vetiver oils etc.
8. Vegetable oils
9. Marine products (fish of all kinds)
10. Handicrafts (a) All types of handicrafts including non-antiques, wood carvings, carvings made of horn brass, etc. ivory articles, toys, palm leaves, articles made of bamboo, dolls, wares, utility articles and decorative articles made of wood, stone silver, brass, lacquer, paper, cardboard, grass, synthetic fibres, cotton and handicrafts, made from combination of these items or others.
(b) Textiles based handicrafts ie. painted, cutwork, patchwork, embroidered and other forms of handicrafts based on textiles.
11. Textiles:
 - (a) Cotton textiles, cotton yarn fabrics, handkerchief, lunkis and other made ups (including embroidered ones) such as bed spreads, table mats, curtains, etc.
 - (b) Woolen textiles and fabrics of all kinds
 - (c) Handloom cloth, crapes and handloom manufactures of all types
 - (d) Silk textiles and all articles made of silk
 - (e) Mixed/Blended textiles, Mixed/blended yarn, and all articles made from a combination of two or more of any synthetic/cotton filament yarn.

12. (a) Ready made garments, Hosiery and Knit wear Cotton, Woollen, Natural silk and other readymade garments of all types.
(b) Hosiery and knitwear made ups of all types.
13. Tea, coffee, instant tea, instant coffee, etc.
14. Tinned, processed and other forms of meat of beef, sheep, goat, chicken, pig. etc. and live animals such as sheep, goats, etc. and fresh eggs.
15. Timber products of all kinds like sawn sizes of timber, musical instruments, etc. and wooden furniture and furniture components.
16. Processed foods like syrup, pickles, pappads, chuttney, juices, etc. and betal leaves.
17. Hookas
18. Leather, plastic, rubber and polythine manufactures of all kinds.
19. Engineering goods:
 - (a) Electronic instruments, appliances and components of all types like calculators, T. V. sets, radios, watches, etc.
 - (b) Batteries of all types, switches, relays, potentiometers, etc., machine tools, accessories and spares.
 - (c) Bicycles components, auto parts of all types, electronic lamps, and fittings of all types, industrial chains, spare parts, instruments, apparatus, steel furniture, electrical equipments.
20. Chemicals and Allied products:
 - (a) Drugs and pharmaceuticals including Ayurvedic preparations of all types, medicinal plants and herbs of all types, soaps and other toilet preparations.
 - (b) Drugs of all kinds photomaterials and films including cinema films.
 - (c) Insecticides and pesticides of all kinds.
 - (d) Jewellery and ornaments of all types.

4. Setting up of the Air Cargo Complex:

The building for the proposed air Cargo Complex may be set up very close to the airport itself. In Madras, the air Cargo Complex building is situated in such a way that it is separated from the runway only by a wall with an electrically operated gate. The nearness of the complex to the runway makes the handling of air cargo easier. The complex must provide accommodation, for parking of export cargo, for warehouses (both for export and import cargo) with cold storage rooms, for the offices of the air cargo agents, the complex office, customs office, offices for banks, offices of the Airlines, customs staff, inspection agencies and promotion councils. The very purpose of the air Cargo Complex is to bring all the agencies connected with export and import under one roof for the speedy and expeditious clearance of cargo both outgoing and incoming.

The planning, design, and construction, of the air Cargo Complex could be undertaken in consultation with technically competent persons in the field. In this connection Government may seek the services of the Director of Cargo, I.A.A.I. Headquarters N.D.M.C. Building, Chanakyapuri, Yashwanth Place, New Delhi, who are a reputed agency in this field. For consultation, the services of the cargo Manager Mr. Sridhar of the Madras air Cargo Complex (one of the best managed air Cargo Complexes in India) may also be made use of.

5. Facilities required at the Complex:

(1) Customs clearance:

At present there are no customs clearance facilities at Trivandrum airport. But once the Complex is established the following officials, under the customs collectorate of Cochin, are to be housed in the Complex. The Assistant Collector of Customs at Trivandrum can be the immediate supervising authority.

1. One Superintendent
2. One Appraiser
3. Three Inspectors

In the initial stages, due to the lack of substantial turn out of Cargo, the workload for the above staff may not be sufficient but once the working of the Complex gets momentum, they will be fully employed.

(2) *Administrative staff for the air Cargo Complex:*

At the outset the air Cargo Complex may have the following staff:

1. One Cargo Manager
2. 2 Assistants
3. 2 Attendants
4. 4 Security staff (round the clock watch)

(3) *Inspection Agencies:*

The following agencies must have their offices (with part-time or full-time as needed) within the complex.

1. State Export Promotion Council
2. Spices Export promotion Council
3. Marine Export Promotion Council
4. Handloom Export Promotion Council
5. Handicrafts Export Promotion Council
6. Cotton Textile Export Promotion Council
7. Drugs Controller
8. Office of the I. S. I.
9. Health Inspector for issuing Health Certificates
10. State Bank of India Extension Counter
11. Deputy Controller of Imports and Exports

The construction and operation of the air Cargo Complex may be undertaken either by the State Government or by the International Airports Authority of India.

6. **Operational Procedures to be adopted at the Complex:**

Exports:

All the export consignments will be brought by the exporters directly through their clearing agents to be presented to the Complex Authorities within an application in the prescribed form for "Entry Permit" to admit the export cargo into the complex premises. The complex fee will be collected there, for taking charge of consignments before presentation to customs for inspection. Thereafter the respective clearing agents of the exporters will prepare the requisite documents for presentation to the customs authorities along with the cargo for inspection. On preparation of the documents, the goods will be inspected and cleared by the customs authorities and kept in their godown within the complex till the arrival of the pick up van of the respective airlines. The cargo will then be loaded into the van and transported to the airport under the strict supervision of the customs authorities till it is loaded into the aircraft. The responsibility of the exporters and the air Cargo Complex Authorities ceases once the cargo is inspected by the customs authorities and certificate of acceptance or clearance is issued by them. Before consignments are lifted by the customs authorities through the pick up van referred to above, another gatepass (out pass) will be prepared for purposes of records and cross verification with the inward gate-pass issued at the time of entry. The entire labour required for loading and unloading of export cargo may be entrusted with the exporters or their clearing agents on a contract basis.

Imports:

Import cargo must be kept completely separate from the export cargo and separate storage and inspection space will have to be provided for that.

After unloading from the air craft the imported cargo will be brought into the bounded warehouse and from there the imported cargo will be moved to the incoming cargo examination hall of the customs. If imported cargo becomes disputed, it should be kept in a separated warehouse by the customs authorities.

All such cargoes as have been cleared by the customs will be taken out of the customs examination hall by the importers or clearing agents at their own cost.

The airlines will be completely responsible for the cargo during their loading and till the time the goods are handed over to the customs for their examination.

During customs examination, the customs and the air Cargo Complex will be responsible for the cargo from the time of the receipt of the cargo from the airlines till they have been cleared and handed over to the exporters/agents.

The entire cargo complex should be insured properly covering risks of fire, theft, etc.

7. Cargo Fees:

The schedule of cargo fee at the rate prevalent in the Madras air Cargo Complex may be adopted for the air Cargo Complex in Kerala with slight modifications as follows:

Schedules of Terminal charges for export Cargo per consignment based on chargeable weight;

(a)	Minimum upto 100 Kgs. per consignment	Rs. 10
(b)	101 to 250 Kgs. per consignment	Rs. 15
(c)	251 to 500 Kgs. „	Rs. 20
(d)	501 to 1000 Kgs. „	Rs. 25
(e)	1001 to 1500 Kgs. „	Rs. 35
(f)	1501 to 2000 Kg. „	Rs. 45
(g)	2001 and above „	Rs. 45 plus Rs. 20 for every additional 1000 Kgs. or part thereof.
(h)	Diplomatic Mail is exempt	
(i)	Diplomatic cargo will be charged as above	

Export Cargo must be customs cleared within 24 hours of arrival at the Complex. Failure to do so will attract the following demurrage charges for every additional 24 hours period or part thereof.

(a)	Minimum and upto 1000 Kgs.	Rs. 5
(b)	Every additional 500 Kgs. or part thereof	Rs. 10

Schedule of Handling/Demurrage charges for import Cargo per consignment based on chargeable weight;

- (a) Minimum handling charge will be Rs. 10.
 (b) First three working days from the date of landing will be free of Demurrage charges. After three days demurrage charges will be as follows:

	4th to 7th day (per day)	8th to 30th (per day)	Beyond 30 days (per day)
	Rs.	Rs.	Rs.
Upto 100 Kgs.	4.00	8.00	15.00
101 to 250 Kgs.	7.50	15.00	30.00
251 to 500 Kgs.	10.00	20.00	40.00
501 to 1000 Kgs.	15.00	30.00	60.00
Above 1000 Kgs.	20.00	40.00	80.00

For Export and Import Cargo requiring strong room/cold storage facility, terminal/demurrage charges will be levied at double the normal rates.

8. Export Incentives:

In order to boost up exports from Kerala, the Government has to provide maximum incentives to the exporters of different consignments. For this purpose an office of the Deputy Chief Controller of Imports and Exports must be opened at the Air Cargo Complex. This office should have adequate delegated powers to disburse cash compensatory benefits and import replenishment licences both under the simplified payment scheme and the normal procedure. They should also have the authority to issue export licences for all countries.

Similarly, the State Government also have to offer maximum cash incentives through the export promotion council office for the different commodities exported from Kerala.

Desirability of Restructuring Freight rates in the inland sector

One of the primary factors needed for attracting exporters and importers to increasingly subscribe to airlifting facility is to offer attractive and competitive freight rates both in the inland and international sector. As to whether they will make avail the facility of airlifting their cargo, once an air Cargo Complex is set up in Kerala, the unanimous reply of the exporters and importers was that "provided the freight rates are made competitive". It would be impractical to suggest the reduction of freight rates to the level of other modes of transportation, yet the present rate structure must be brought down considerably so as to encourage more exporters and importers to use the airlifting facilities. The air freight structure in the inland sector is considered to be very much high when compared with the international rates. Such dichotomy in the inland and international freight rates should be reduced to the minimum to encourage exports. The Indian Airlines and Air India should work out integrated competitive freight charges so as to encourage exporters and importers to increasingly subscribe to the air Cargo facilities and to fully utilize the existing capacity of the Airlines. They should also devise a mechanism to economically share the revenues between them, since ultimately it is the promotion of exports and better utilization of air Cargo carrying capacity that is most important.

Again in order to facilitate the effective diversion of Cargo from Cochin to Trivandrum and to optimise the Cargo carrying capacity of aircrafts operating from Trivandrum, it would be worthwhile, if the Indian Airlines reduce its freight rates in such a way that *it becomes bearable to the trade circles.*

It would be worthwhile to point out that on analysing the total distributive costs it could be seen that the cost of export/import by air is only tolerably high when compared to the costs involved in the case of other modes of transport together with the delay caused.

VI. SUMMARY AND CONCLUSIONS

Summary

1. In the realm of export-import traffic, the share of airborne trade is in the increase throughout the world. In India, the volume of airborne trade has increased considerably from year to year. Kerala provides an excellent base for the generation of cargo for diversion to airborne traffic. As a follow up of the Government of India's policy of setting up Integrated air Cargo Complexes in all the important Inland airports in India, the 'Standing Committee on Promotion of Exports by Air (SCOPE-AIR) held at Bangalore in May 1977 decided to request the Government of Kerala to undertake a traffic survey to assess the potentialities of import and export cargo that can be diverted through Cochin airport. In a later communication, the Government of India have recommended to the State Government that a traffic survey of both Cochin and Trivandrum airports be conducted. The survey was undertaken by the Bureau of Economics and Statistics of the Government of Kerala.

Besides the whole of Kerala, the neighbouring districts of Tamilnadu like Coimbatore, Madurai, Tirunelveli and Kanyakumari were also included in the aerial hinterland of the two airports in Kerala and the survey was carried out in the entire hinterland.

Kerala has a very strong agricultural base with the predominance of high value cash crops many of which have good scope for diversion to air Cargo in various forms. The size of the cattle population including poultry is also very encouraging that gives ample scope for the export of meat and poultry products by air. Kerala has an envying position in respect of her marine wealth out of which all the high value items can be airlifted.

With her unparalleled position in the generation of hydro-electric power, the State has already laid a strong foundation for the setting up of a number of industrial ventures including small scale industries. Due to the heavy involvement of the State Government in the massive industrialisation programmes a number of industries are now functioning in the State. These industries together with the major public sector undertakings will generate a sizable volume of cargo for export by air and will also import substantial volume of products by air.

As a major foreign exchange earner to the national economy, Kerala's exports had been traditionally on the increase. The markets for the Kerala products were U. S. A., U. S. S. R., E. E.C. Countries, Japan and Far East and Middle East countries. From the existing export list of Kerala, all those items that are high valued and less space consuming can be possibly diverted for airlifting.

Just as exports, imports into Kerala had also been on the increase over the years. Among the products imported those items which have high unit value and requiring only limited space can be diverted for import by air.

Even without any formal facilities both exports and imports by air from Kerala through Cochin has exhibited an increasing trend for the last few years.

From the field enquiries made in this connection it was found that substantial volume of cargo will be generated for airlifting from the aerial hinterland of the two airports of Kerala. The most important products that will be available for airlifting from the aerial hinterland are cardamom, oleoresins of spices and spices oils, essential oils like sandal wood oil and vetiver oil, marine products, handicrafts, textile manufactures, cotton hosiery, instant tea and instant coffee, tinned and frozen meat, decorated hookas, electronic items, furniture components, processed foods, vegetables and fruits, ayurvedic medicines etc. The value of such cargo available for airlift from the hinterland is estimated at Rs. 48.00 crores in 1979-80, Rs. 58.65 crores in 1980-81 and Rs. 68.00 crores in 1981-82. Similarly imports of cargo available will be of the order of Rs. 1.50 crores in 1979-80, Rs. 2 crores in 1980-81 and for Rs. 5.00 crores in 1981-82. The most important items of import will be chemicals and chemical preparations, drugs and medicines, instruments, operational appliances, machinery and parts, paper and paste board, books and periodicals, precision equipments etc.

The diversion of cargo for airlifting will depend upon a number of factors like attractive and competitive freight rates by the airlines, cash incentives provided by the Government and customs clearance facilities etc.

2. As for the location of the air Cargo Complex, both the airports Cochin and Trivandrum were considered. Cochin is an inland airport. Cochin has a superior position in respect of the availability of cargo since it is the commercial centre in the State. The airport is under the complete control of the Naval Authorities. The cargo carrying capacity of Aircrafts landing at Cochin are very limited since they are smaller aircrafts (average 2 tonnes per day). The runway is at present not in a position to accept bigger aircrafts.

Trivandrum has become an international airport. It operates very big aircrafts to important inland destinations and to some international destinations. The carrying capacity of the aircrafts operated from Trivandrum is very high (17 tonnes per day on an average). Cargo for international destinations is not moving from Trivandrum because of the absence of customs clearance facilities at Trivandrum airport. *Taking into account all the above factors, the Integrated Air Cargo Complex in Kerala may be set up at Trivandrum at present.* But when similar facilities develop at Cochin, the setting up of another air Cargo Complex at Cochin may be thought of.

The air Cargo Complex must have facilities for the customs clearance for all the possible arrivals of cargo. It must have facilities for warehouses with cold storage facilities both for export and import cargo. The complex should also provide accommodation for administrative staff of the complex, customs clearance offices, inspection agencies and air cargo agents. On the spot banking facilities should also be provided. Godown and warehouses for cargo agents may also be thought of, since it may be required in the near future.

Cargo fees may be collected at the rates prevalent in the Madras Air Cargo Complex with slight modifications.

Maximum export incentives must be offered by the Government for the effective diversion of cargo to the complex for airlifting. Both the national and international airlines should adopt an integrated freight rate policy that will be most competitive and economical to the exporters. Indian Airlines should offer an attractive rate for the movement of cargo from Cochin to Trivandrum.

Conclusions

3. From the foregoing paragraphs it is clear that Kerala including the adjoining districts of Tamilnadu will divert sizable quantum of cargo for airborne trade, once an integrated air Cargo Complex is established in Kerala. The total air Cargo potential for exports from Kerala is estimated to be Rs. 48.00 crores in 1979-80, Rs. 58.65 crores in 1980-81 and Rs. 68 crores in 1981-82. So there is a strong case for the establishment of an air Cargo Complex in Kerala.

The estimates are arrived at based on the results of the survey conducted in the hinterland and on the discussions conducted with the various commodity boards, chambers of commerce and various other agencies. In the initial stages a massive flow of goods may not be arriving outright but a break-through is possible by offering competitive and promotional freight rates and other incentives from the Government side. Once the flow of goods gets momentum the potentialities are very large and the possibilities of diversion may go beyond the estimates.

As for the location of the air Cargo Complex, even though Cochin has a strong economic justification and more than 60% of the exporters/importers in the hinterland preferred Cochin for the setting up of the air Cargo Complex, the possibilities at present are bleak. Cochin airport is almost a defence installation and further the cargo carrying capacity ex-Cochin is very meagre and hence the Integrated Air Cargo Complex cannot at present be setup at Cochin Airport. The International Airport at Trivandrum has considerable carrying capacity to important inland and international destinations and the entire cargo generated from the hinterland can be airlifted from Trivandrum without much backlog. Hence the Integrated Air Cargo Complex at present may be located at Trivandrum and the possibilities of setting up another at Cochin may be considered later. The entire cargo for airlifting generated in the hinterland may not come to Trivandrum in the initial stages due to distance and incurring of additional transportation cost. The arrival of cargo will pick up in a phased manner.

Once the carrying capacity at Cochin is increased and sufficient space is provided for the building up of the *Air Cargo Complex in the Airport (both at present not available)* another *Air Cargo Complex at Cochin* can be thought of.

The planning, design and construction of the Air Cargo Complex in Kerala may be taken up in consultation with a technically competent organisation like the Directorate of Cargo, IAAI Headquarters, New Delhi.

Along with the setting up of the air Cargo Complex, Customs clearance facilities must be obtained from the Government of India for all those commodities likely to be diverted to the complex (see list of commodities in the previous Chapter).

Offices of all the agencies connected with the promotion and conduct of air export must be opened at the air Cargo Complex (see Inspection Agencies).

Adequate cold storage facilities should be provided at the complex for keeping frozen cargo.

All the advantages of airlifting including the cash incentives offered to specific commodities of export, concessive freight rates, promotional freight rates, specific commodity rates and other economics of time and cost must be communicated to the exporters/importers of the aerial hinterland, through Commodity Boards, Development Authorities, Promotion Councils, Export Houses, Chambers of Commerce and other media.

The existing air freight structure of the National and International Airlines may be re-structured so as to enable the trading community, to increasingly participate in the airborne trade to boost up exports and to fully utilise the cargo carrying capacity of the airlines.

APPENDIX I

REGIONS

I. *American Zone*

U. S. A., Canada, Brazil, Dominion-Republic, Uruguay, West Indies, Mexico, Argentina.

II. *Japan and Far East*

Japan, Hongkong, Malaysia, Cambodia, Vietnam, Thailand, Burma, Fiji Islands, Sri Lanka, Philippines, Bangladesh.

III. *E. E. C. Countries and Western Europe*

U. K., Austria, Belgium, Denmark, Ire, Finland, France, Germany, Greece, Holland, Italy, Norway, Portugal, Spain, Sweden, Switzerland, Turkey, Cyprus.

IV. *Communist Countries*

U. S. S. R., E. Germany, Hungary, Poland, Rumania, Ugoslavia, Korea, Czechoslovakia.

V. *Middle East*

Algeria, Egypt, Baharin, Iran, Iraq, Israel, Jordan, Kuwait, Oman, Qatar, S. Arabia
U. A. E., Syria, Aden.

VI. *Australia and Newzealand*

VII. *African Countries*

Gayana, Surinam, Keniya, Libya, Mauritius, Morocco, Senegal, Tunisia, Ethyopia, Suddan, Tanzania, Somali Land.

APPENDIX I-A

Average of Export of Six Years (Value) from 1971-72 to 1976-77

(Rs. in lakhs)

Region	Name of Commodities							
	Cardamom	Cashew kernels	Coffee	Chemicals and Chemical preparations	Coir Mats	Cotton and manufactures	Drugs and medicines	Frog legs fish and prawns
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
I. American Zone	3.48 (1.04)	3294.31 (36.74)	640.24 (22.40)	8.33 (8.61)	148.05 (19.52)	149.38 (18.03)	2.01 (4.53)	1982.99 (34.74)
II. Japan and Far East	36.11 (10.80)	829.33 (9.26)	30.46 (1.06)	39.12 (40.46)	22.14 (2.92)	35.15 (4.24)	10.52 (23.69)	2977.47 (52.16)
III. E.E.C. Countries & Western Europe	16.86 (5.04)	609.91 (6.81)	1067.45 (37.34)	13.45 (13.91)	440.67 (58.09)	438.13 (52.87)	23.20 (52.24)	510.82 (8.95)
IV. Communist Countries	131.417 (39.30)	3794.443 (42.32)	805.655 (28.19)	0.04 (0.04)	51.742 (6.82)	87.243 (10.53)	4.258 (9.59)	12.310 (0.21)
V. Middle East	143.497 (42.91)	106.917 (1.19)	159.797 (5.59)	26.266 (27.17)	28.520 (3.76)	17.472 (2.11)	1.698 (3.83)	5.042 (0.09)
VI. Australia & New Zealand	..	328.798 (3.68)	154.868 (5.42)	9.180 (9.49)	63.887 (8.42)	97.905 (11.81)	0.720 (1.62)	219.082 (3.84)
VII. African Countries	3.050 (0.91)	..	..	0.310 (0.32)	3.570 (0.47)	3.422 (0.41)	1.997 (4.50)	0.450 (00.01)
Total	334.42 (100.00)	8963.71 (100.00)	2858.46 (100.00)	96.70 (100.00)	758.58 (100.00)	828.70 (100.00)	44.41 (100.00)	5708.08 (100.00)

APPENDIX I-A—(Contd.)

Region	Name of Commodities						
	Fruits & fruit products (canned) vegetables	Handicrafts	Leather and leather manufactures	Pepper	Tea	Wood Rose wood	Sundries
(1)	(10)	(11)	(12)	(13)	(14)	(15)	(16)
I. American Zone	1.94 (2.82)	12.13 (16.61)	2.02 (13.70)	664.70 (23.56)	793.62 (17.49)	20.15 (2.32)	108.85 (13.80)
II. Japan and Far East	0.33 (0.48)	19.49 (26.42)	0.92 (6.24)	48.82 (1.73)	53.01 (1.17)	499.36 (57.51)	219.27 (27.79)
III. E.E.C. Countries & Western Europe	20.92 (30.46)	34.45 (47.18)	3.38 (22.93)	306.02 (10.85)	723.25 (15.94)	302.99 (34.90)	214.09 (26.13)
IV. Communist Countries	32.850 (47.72)	1.403 (1.92)	5.90 (40.03)	1735.53 (61.51)	1226.87 (27.05)	33.67 (3.88)	81.06 (10.28)
V. Middle East	11.222 (16.30)	3.975 (5.45)	0.65 (4.41)	55.92 (1.98)	912.57 (20.12)	11.48 (1.32)	112.31 (14.23)
VI. Australia & Newzeland	0.248 (0.36)	1.695 (2.33)	1.69 (11.47)	4.20 (0.15)	264.10 (5.82)	0.61 (0.07)	46.11 (5.84)
VII. African Countries	1.276 (1.86)	0.065 (0.09)	0.18 (1.22)	6.10 (0.22)	562.88 (12.41)	..	7.36 (0.93)
Total	68.84 (100.00)	73.02 (100.00)	14.74 (100.00)	2821.29 (100.00)	4536.30 (100.00)	868.26 (100.00)	789.05 (100.00)

Note; 1. Figures of Export from Kerala refer to those from Cochin Port only.
2. Figures in brackets refer to percentages.

APPENDIX I-B

Average Import for Six Years (Value) from 1971-72 to 1976-77

(Rupees in lakhs)

Region	Name of Commodities				
	Chemicals and chemical preparations	Instruments, Apparatus and appliances	Oils, Vegetable Oils	Textile Goods	Sundries
(1)	(2)	(3)	(4)	(5)	(6)
I. American Zone	25.49 (20.34)	29.26 (18.75)	117.33 (100.00)	71.24 (27.75)	2.67 (1.25)
II. Japan and Far East	27.12 (21.65)	53.38 (34.20)	..	64.83 (25.26)	34.13 (15.98)
III. E.E.C. Countries and Western Europe	67.19 (53.64)	29.30 (18.77)	..	111.34 (44.55)	151.39 (70.90)
IV. Communist Countries	5.35 (4.28)	43.46 (27.84)	..	6.27 (2.44)	24.42 (11.44)
V. Middle East	0.06 (0.04)	..	..	..	0.37 (0.17)
VI. Australia and Newzealand	0.97 (0.05)	0.63 (0.40)	..	..	0.21 (0.10)
VII. African Countries	..	0.06 (0.04)	..	..	0.35 (0.16)
Total	125.28 (100.00)	156.09 (100.00)	117.33 (100.00)	256.68 (100.00)	213.54 (100.00)

Note: 1. Figures of Import relate those through Cochin Port only.
2. Figures in brackets refer to percentages.

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