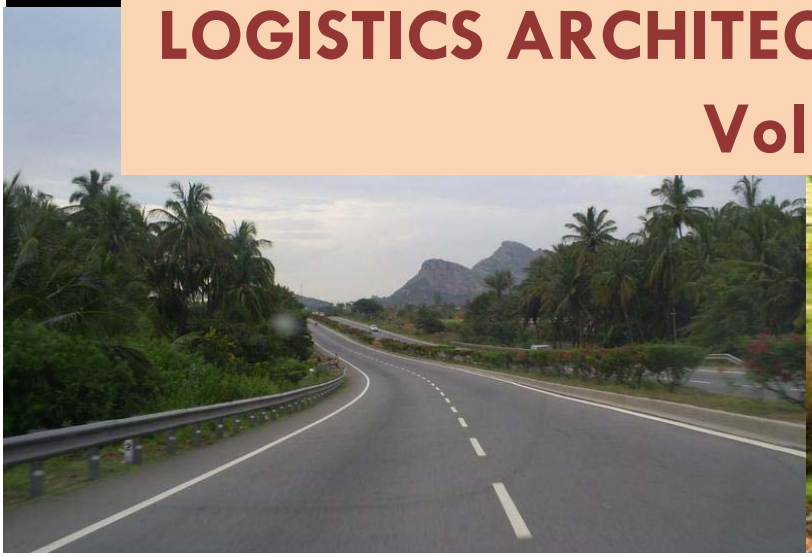



PRE-FEASIBILITY STUDY FOR (TRANSPORT) LOGISTICS ARCHITECTURE IN KARNATAKA

Volume I




APRIL 2010

Submitted to

Infrastructure Development Department, Government of Karnataka

iDeCK

Infrastructure Development Corporation (Karnataka) Limited

Infra House, 39, 5th Cross, 8th Main, RMV Extension,
Sadashivnagar, Bangalore – 560080

Ph: 91 – 80 – 43448000; Fax: 91 – 80 – 23613016

Table of Contents

List of Tables

List of Figures

Abbreviations

BT	Bio Technology
CAGR	Compounded Annual Growth Rate
CFS	Container Freight Station
GDP	Gross Domestic Product
GoK	Government of Karnataka
GSDP	Gross State Domestic Product
HMRDC	Hassan Mangalore Rail Development Corporation
ICD	Inland Container Depot
IDD	Infrastructure Development Department
iDeCK	Infrastructure Development Corporation (Karnataka) Limited
IT	Information Technology
JWG	Joint Working Group
Km	Kilometer
Km	Kilometer
MT	Metric Tonnes
NH	National Highway
NMPT	New Mangalore Port Trust
POL	Petroleum, Oil and Lubricants
SH	State Highway
TEU	Twenty-foot Equivalent Unit

Foreword

Karnataka is one of the states' in the country witnessing rapid economic growth due to various central and state level policy initiatives that have facilitated the development of industrial and allied infrastructure. In order to attract investments from other parts of the country and abroad, the Government of Karnataka has announced setting up of various industrial zones, the Suvarna Karnataka Corridor Project to provide connectivity to the proposed industrial zones, development of roads across the state, development of regional airports, development of ports at Tadri and Haldipur and setting up of food parks at various places across the state.

The logistics sector, comprising of the transportation, storage and distribution components is a key driver of a state's competitiveness in the national and international markets. Hence, all components of the logistics business need to be examined for opportunities to improve efficiencies. In this context, Infrastructure Development Department (IDD), Government of Karnataka, has commissioned a study on the logistics architecture in the state, with special focus on the transportation, storage and distribution aspects of business and trade.

The Report is presented in two volumes, Volume I addresses the transportation component and Volume II addresses the storage and distribution components of the logistics architecture.

This Report (Volume I) examines the transportation component of the logistics sector in the state. Various industries and their transportation mechanisms have been studied to assess the gaps and requirement in transport infrastructure. An indicative list of locations for setting up transport hubs in the state have been identified up and presented in this report.

1. INTRODUCTION

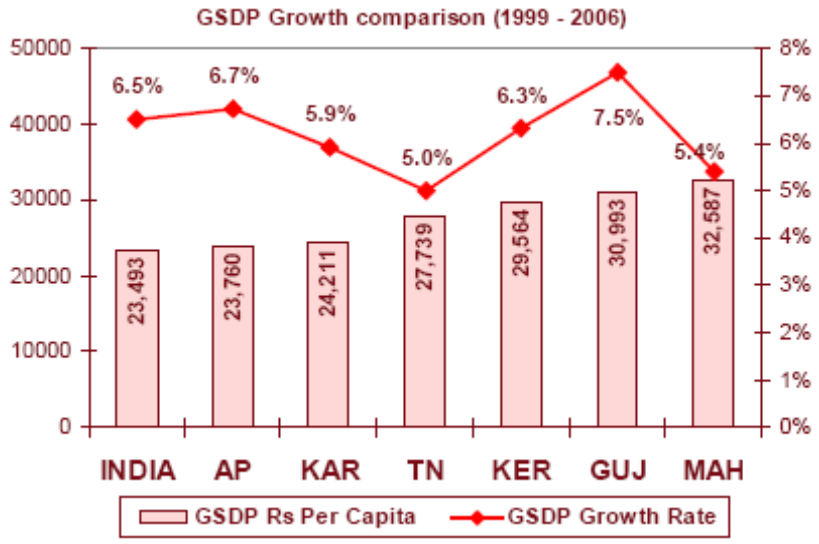
Karnataka is India's eighth largest state in terms of geographical size. The state comprises 27 districts covering an area of 474.44 lakh acres (1.92 lakh sq km). Karnataka's share of 5.31% of the nation's total population in 1991 had reduced to around 5% in 2008. The state's decadal growth rate of population has also been declining, though it is higher than the neighbouring states. The population density of the state at 275 per sq km is relatively low compared to other states. A significant growth is expected in the urban population, which is likely to reach 2.82 crore in 2026 from the current 2.08 crore. Industry and trade sectors are also gowing at a steady pace and are likely to see more investments in the future. According to the Annual Survey of Industries 2004-05, the share of Karnataka in net value added in India was 7.90 per cent and the State occupies the seventh place in the country.

With the massive development programs on the anvil, providing logistics support and necessary infrastructure is of vital importance to attract and retain investors. Infrastructure Development Department (IDD), Government of Karnataka (GoK) intends to map the logistics architecture for various industries across the state and identify suitable places for setting up of Logistic hubs to facilitate transport, storage and distribution linkages. IDD has requested Infrastructure Development Corporation (Karnataka) Limited (iDeCK) to assist them in carrying out a pre-feasibility study for the logistics architecture in the state. This Report (Volume I) pertains to the Transport component of the logistics architecture.

1.1 Economic scenario

The Gross State Domestic Product (GSDP) for Karnataka in 2006-07 was Rs. 1,94,008 crore (at current prices) as against Rs. 37,18,000 crore for India, which makes it 5.2% of the country's GDP. Karnataka has had moderate growth rates in its state income. In the period 1999-2006, Karnataka had a GSDP growth rate of 5.9% making it fourth amongst the compared States (see figure below) and lesser than India's GDP growth of 6.5%. The State's real income growth, has now reached nearly 6%. As seen in the figure below, Karnataka has a lower per capita GSDP than most comparable States - it is only marginally higher than the all India average.

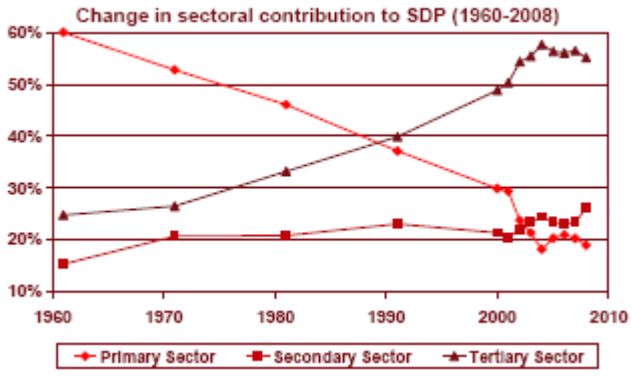
Figure 1: GSDP Growth comparison of India with other states



Source: Karnataka – A vision for development, Karnataka State Planning Board

The character of the State's economy has changed drastically over the years. When the State was formed in 1956, its economy was predominantly agrarian, but this has now altered. The primary sector, which contributed about 60% of the GSDP in 1960- 61 comprised only about 18.9% in 2006-07. In the same period, the share of secondary sector increased from 15.2% to 26%. The share of the tertiary sector has more than doubled from 24.8% to 55.1%. The service sector boom since the 1990s has boosted the State's economic growth. The manufacturing sector which lagged behind for some time has also grown well, though in relative terms, it has remained steady.

Figure 2: Structural change in economy



Source: Karnataka – A vision for development, Karnataka State Planning Board

1.2 Index of Industrial Production

Index of Industrial Production (IIP) is one of the important macro economic indicators, the magnitude of which represents the status of production in the industrial sector for a given period of time as compared to a reference period of time. The average annual growth of industrial production (mining, manufacturing and electricity) was 6.36 percent in 2007-08 as against 6.50 percent in 2006-07.

According to the index of industrial production, in 2007-08, manufacture of non metallic mineral products recorded the highest growth at 14.39 percent followed by basic metal and alloys 14.01 percent. Growth rates in the other sectors were food products (9.23%), rubber, plastic, petroleum and coal products (8.12%) and beverages, tobacco and tobacco products (7.75%).

The provisional general index of industrial production of Karnataka for 2007-08, with 1993-94 as the base year, was 244.13. This index comprises mining, manufacturing and electricity (generation). Sector wise indices for 2005-06 to 2007-08 are presented in Table 1 below.

The index for Karnataka, which stood at 226.19 in 2006-07 moved up to 244.13 in 2007-08, registering an increase of 7.93 percent. The mining sector showed highest growth rate of 17.81% with an index value of 282.95 followed by manufacturing sector with a 7.76% growth rate and an index value of 245.71 and electricity sector registered a growth of 6.64% with an index value of 216.23.

Table 1: Index of Industrial Production of Karnataka Base: 1993-94 = 100

Division / sector	Weight	2005 – 06*	2006-07*	2007-08*
Mining	2.3550	242.45 (2.73)	240.18 (-0.94)	282.95 (17.81)
Manufacturing	89.3083	211.46 (5.89)	228.01 (7.83)	245.71 (7.76)
Electricity	8.3367	179.73 (4.93)	202.76 (12.81)	216.23 (6.64)
General Index	100.00	209.54 (5.73)	226.19 (7.94)	244.13 (7.93)

Note: 1) Figures in brackets indicate percentage changes over the previous year (2) * Provisional figures.
Source: Economic Survey of Karnataka 2008 – 09

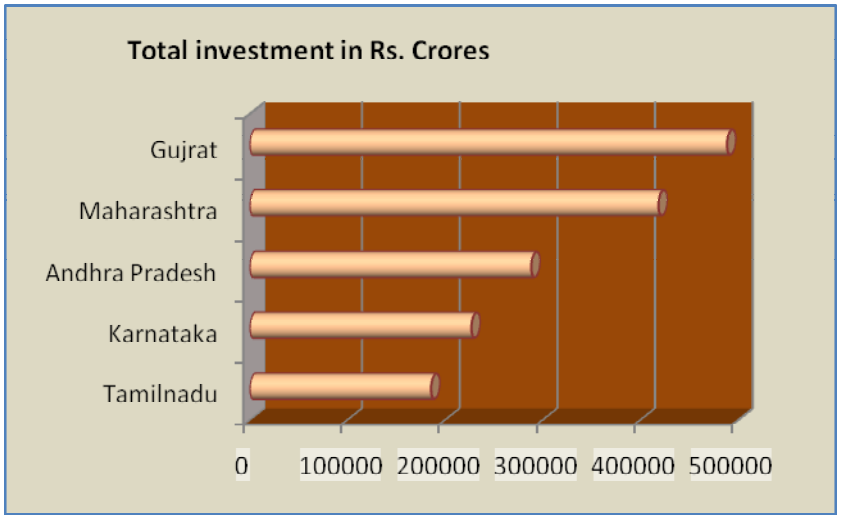
1.3 Investments Scenario

The industrial investment proposals between August 1991 and January 2008 for different states was compared. These proposals included Industrial Entrepreneur Memorandum (IEMs), Letters of Intent (LoIs) and Direct Industrial Licenses. The total investment proposals for Karnataka was much lower when compared to Andhra Pradesh, Maharashtra or Gujarat for the period.

Table 2: Investment proposals: August 1991 – January 2008

States	Rs.Crore
Karnataka	226913
Andhra Pradesh	288235
Tamilnadu	185640
Maharashtra	418439
Gujarat	488620

Source: SIA Statistics, February 2008

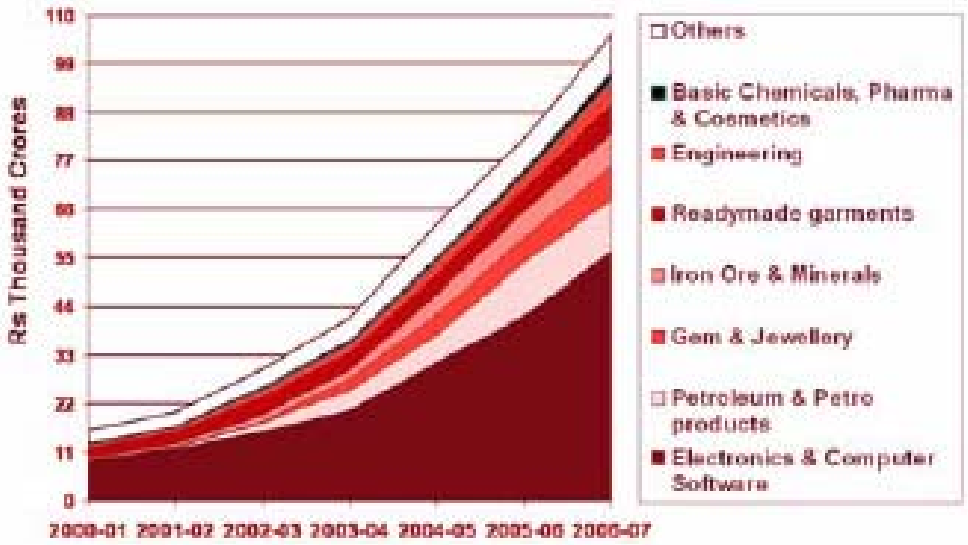


For the year 2008 – 09 (upto October 2008), the State Level Single Window Clearance Committee (SLSCC) had approved 209 projects with an investment of Rs. 3346.98 crore. In addition to this, the State High Level Clearance Committee had cleared 19 projects with an investment of Rs. 23413.85 crore.

1.4 Exports Performance

During the 10th plan period, the total exports from Karnataka have grown from Rs. 20,144 crore (2001-02) to Rs. 1,05,850 crore (2006-07) at a CAGR of 39%. This growth is depicted in the graph below. Electronics and computer software exports have grown at a CAGR of 37% with the total exports reaching Rs. 56,478 crore in 2006-07. This sector constituted 53% of the total exports from the state. Thirty six per cent of the total Indian exports in this sector were from Karnataka. During the 10th Plan, the highest growth rates in the state were witnessed by petroleum and petro-products, with exports of Rs. 36,087 crore (CAGR =113%) and gems and jewellery sector with exports of Rs. 21,095 crore (CAGR=94%). The other major exports from the State during the 10th Plan were iron ore and minerals (Rs. 21,299 crore; CAGR=60%), readymade garments (Rs. 24,291 crore; CAGR=19%) and engineering goods (Rs. 15,083 crore; CAGR=39%).

Figure 3: Export Performance: 2001 - 2007



Source: Karnataka – A vision for development, Karnataka State Planning Board

In 2007 – 08, the state's share in country's exports was over 16%. The table below provides a trend in the share of Karnataka's exports vis-à-vis the country's exports for the period 2001 – 02 to 2007 – 08.

Table 3: Exports performance of Karnataka *(Rs. Crore)*

Exports	2001-02	2002-03	2003-04	2004-05	2005-06	2006-07	2007-08
Country's Exports	245518	299290	349582	430888	546466	709642	817872
Exports from Karnataka	20145.6	29898.0	41670.2	62638.6	82279.6	107375.6	132703.4
State's share in Country's Exports	**8.2%**	**10%**	**11.9%**	**14.5%**	**15%**	**15.1%**	**16.2%**

Source: Visveswaraiah Industrial Trade Centre

The commodity wise exports of Karnataka for 2007 – 08 and 2008 – 09 is enclosed in **Annexure 1**.

1.5 Scope of Work

Considering the current economic, industrial and export performance of the state and the proposed development projects in the state, the key objectives of the Study are as follows:

- Review of various industrial growth corridors in Karnataka and appraisal of suitable locations for development of Logistics hubs.
- Preliminary assessment of potential based on a study of Market & Demand Profile.
- Study of Transportation linkages and connectivity (road, rail, port, airport)
- Study of various policies and institutional frameworks.

1.6 Approach & Methodology

The methodology adopted for the study is explained below:

a) The economy, industrial production indices and export performance of the state was reviewed.

b) The transportation logistics with respect to various modes of transport and the transshipment centres were examined. The commodity-wise import and export cargo at the transshipment centres was assessed.

c) Key industries were identified for the study, based on contribution to GSDP, frieght volume movement and quantum of exports. The transportation logistics for each of

these industries was studied in detail. The industrial corridors in the state and the proposed projects were also examined. Based on all these factors, the key issues in transportation logistics were identified.

d) Discussions were held with various industry personnel and associations to obtain their views and inputs. The government departments and agencies concerned with the study were met and the data / inputs required for analysis was obtained. Discussions were also held with transshipment centers to understand the cargo volumes being handled and the issues being faced with respect to transportation connectivity.

e) Based on (c) and (d) above, the key issues in transportation logistics were identified.

f) The indicative locations for setting up logistics hubs were identified based on the proposed industrial zones and taking into account the key issues in transportation.

g) An approximate costing for setting up a logistics hub has been estimated.

A flow chart indicating the approach and methodology for the Study is provided below.

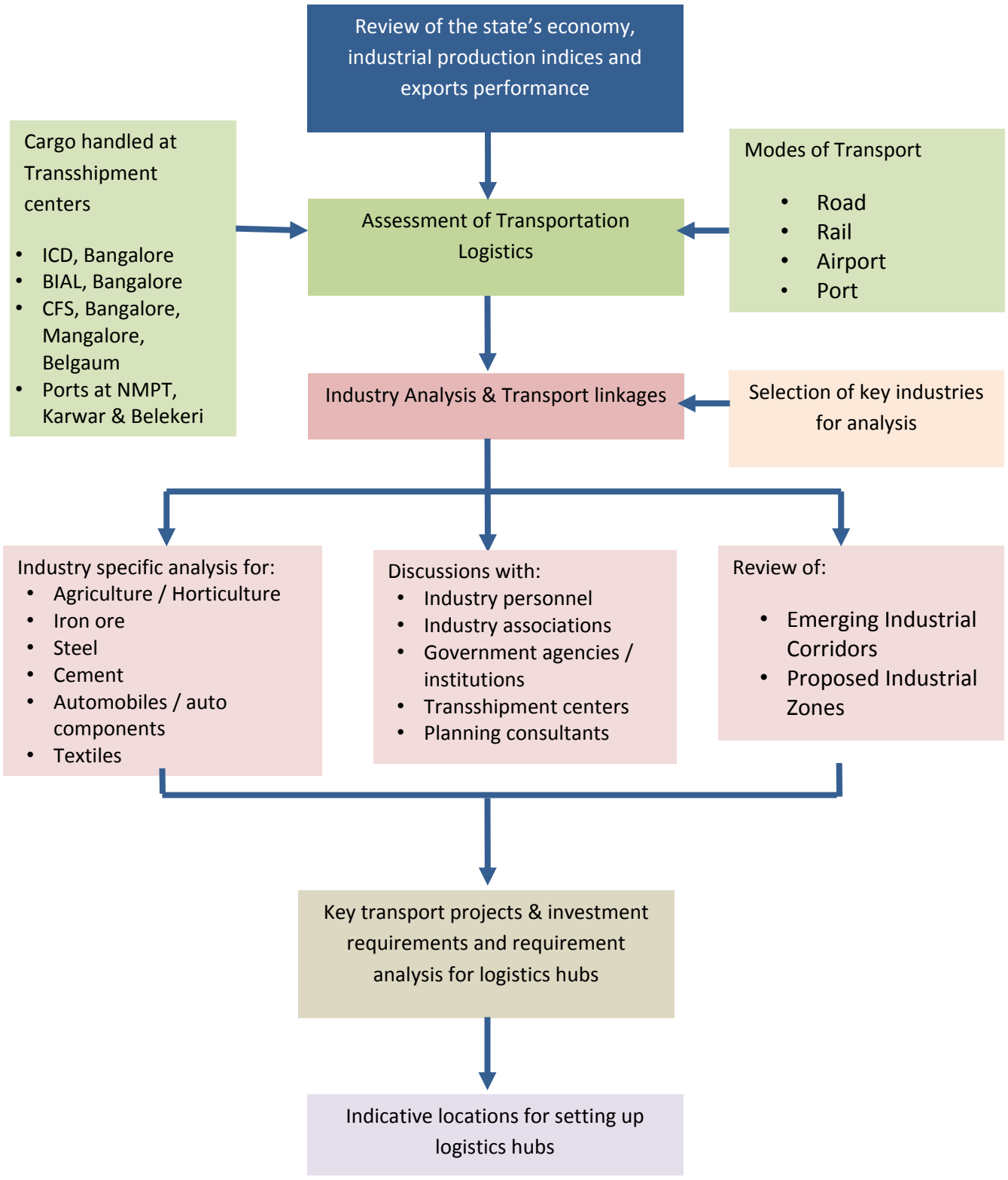


Figure 4: Methodology adopted for the study

1.7 Report Structure

The Report is presented in eight Chapters. A brief description of the contents of each chapter is given below.

Chapter 1: The background to the study, overview of the economic scenario, industrial production indices and exports performance of the state is briefly discussed in this Chapter. The scope of services and the methodology adopted in undertaking the study are also outlined in this Chapter.

Chapter 2: The transportation logistics with respect to the modes of transport viz road, rail, airport, port and the transshipment centres are elaborated in this Chapter. The demand Vs supply for different modes of transport and the gaps in terms of capacity for various modes of tansport have been assessed. The cargo handled at various transhhipment centres is also provided in this Chapter.

Chapter 3: This Chapter assesses the industry-wise production, exports, transportation routing for various commodities and the the key transport connectivity issues.

Chapter 4: The demand for various industries has been estimated in this Chapter. Based on the same the gaps in transport infrastructure that need to be addressed are detailed out in this Chapter.

Chapter 5: Based on the gaps in transport infrastructure identified in Chapter 4, this Chapter draws up a list of transport projects required to be undertaken for addressing the gaps in transportation infrastructure.

Chapter 6: The emerging and proposed industrial corridors in the state and the transport connectivity of these corridors to the transshipment centers are described in this Chapter.

Chapter 7: The components of a transport hub and the indicative locations for setting up transport hubs in the state are analysed and presented in this Chapter.

Chapter 8: This Chapter summarizes the transport investment projects and the etimated costs for improvement.

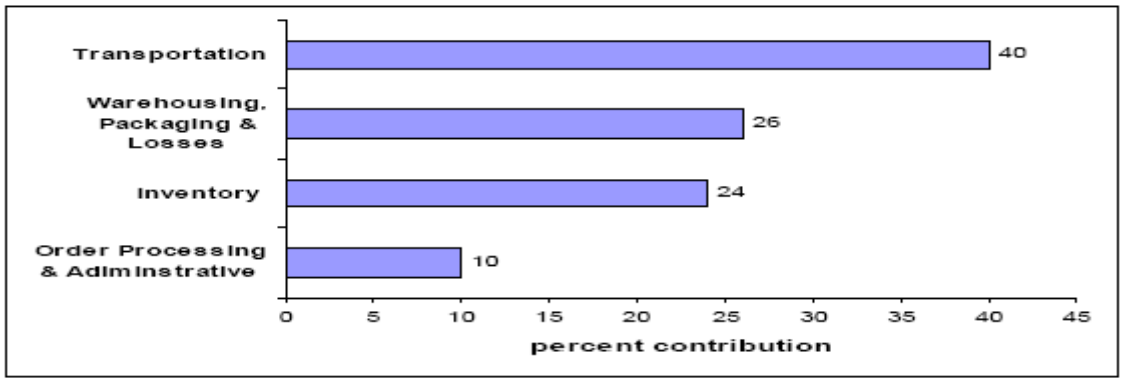
Chapter 9: This Chapter highlights the various state polices relevant to the devleopment of industries in the state.

2. TRANSPORTATION LOGISTICS – EXISTING SCENARIO

The costs involved in the logistics chain (i.e. inventory holding, transportation, warehousing, packaging, losses and related administration costs) have been estimated at 15 -20% of India's GDP, which is higher than 8% of USA's GDP and lower than 21% of China's GDP. In India, the transportation costs in logistics are inordinately high – nearly 40% of the total logistics costs. This is mainly due to :

- Regional concentration of manufacturing activities
- Geographically diversified distribution activities
- Inefficiencies in infrastructure and accompanying technology

Figure 5: Elements of logistics costs



Transportation logistics is a part of the supply chain dealing with the transportation of goods/ commodities from the point of production to the end customer (or point of consumption) or to transshipment centers for exports. The transportation industry in India is fragmented and largely un-organized. It carries a large percent of the national load and almost all of the regional load.

This chapter discusses the various modes of transportation and the transshipment nodes in the state, for exports and imports of goods and commodities.

2.1 Modes of transportation

Transportation of cargo is mainly by four modes – road, rail, air and sea. In India goods are transported predominantly by road and rail. Whereas road transport is controlled by private players, rail transport is handled by the central government. With the second largest network in the world, road contributes to 65% of the freight transport. Road is the preferred mode because of its cost effectiveness and flexibility. Rail, on the other hand, is preferred because of containerization facility and ease in transporting ship-containers and wooden crates. Sea is another complementary mode of transport. Ninety five per cent of India's foreign trade happens through sea.

The table below clearly indicates the vitality and importance of road transport in India:

Table 4: Comparison of various modes of transport

Parameters for comparison	Rail	Road	Sea
Number (Wagon, trucks, ships)	214760	3487538*	806
Freight capacity (million tonne)	10.66	5.12*	7.9
Route length (million km) / No of major ports	0.11	3.34	12
Freight revenue (US $ billion)	7	38.64	4304
Key commodities	Coal, steel, petroleum, primary metals	Automobiles, electronic items, garments etc	Iron ore, coal, petroleum (industrial and consumer products on the outbound export)

Source: The logistics sector in India – Overview & Challenges, Pankaj Chandra & Nimit Jain
**This figure is for 2002-03*

In Karnataka, roadways, railways and ports are the main modes of transportation. The total road network in the state is about 60,000 km and the railway network is around 3250 km. The state has two international airports at Bangalore and Mangalore and one major port at Mangalore. There are also two operational minor ports at Karwar and Belekeri.

2.1.1 Roads

Roads carry about 70% of the freight in the state. The total road network in the state including National Highways (NH), State Highways (SH) and district roads (MDR) in the state is about 52,000 km. The break up of roads in each category is given below.

NH : 3,843 km
SH : 20,739 km
MDR : 37,944 km

The state is connected to the neighboring states and other parts of India through 14 NHs, which account for six per cent of total NH network in India. The district centers are connected with each other through 114 SHs.

While the improvement and development of NH network comes under the purview of the central ministry and National Highways Authority of India (NHAI), the development & maintenance of state highways, MDRs and other district roads / village roads are the responsibility of the Karnataka Public Works Department (KPWD). The capacity augmentation required as per the norms specified by Indian Road Congress (IRC) and the likely investments needed are presented in the following table.

Table 5: Road Capacity enhancement and estimated investments

Category of Roads	Road Length (km)	IRC norms	Availabiliy of roads as per IRC norms (km)	Capacity augmentation / strengthening (km)	Estimated Investment (Rs. Crore)
State Highways	20738.68	75% should be double lane – i.e. 15554.01 km	2516.49	13037.52	104300.2
Major District Roads	37943.57	65% should be double lane / intermediate lane – i.e. 24663.32 km	4309.17	20354.15	162833.2
Other District Roads / Village Roads	147212.36	50% of the total road should be strenghthened / improved – i.e. 73606.18	-	73606.18	147212.4
			Total	**106997.9**	**414345.7**

Source: iDeCK analysis

About 1,06,998 km of roads in the state are required to be developed by FY 2020 and the estimated investment required for the same is approximately Rs. 4,14,346 crores. The index of road length per sq km area which is currently at 1.07 needs to improve to 1.5.

The list of NHs in Karnataka, the district wise road lengths and the proposed road projects in the state are enclosed in **Annexure 2**.

2.1.2 Railways

The state has approximately 3250 km length of railway lines. The gauge-wise total length of railway lines is given below:

Table 6: Gauge-wise total length of railway lines

Railway line	Route kilometers (Route in kilometers)
Broad Gauge	3069
Meter Gauge	97
Narrow Gauge	84
TOTAL	**3250**

Source: Railway Infra Plan, Karnataka, 2009

Compared to other neighboring states, though there has been a considerable development in Railways in Karnataka in terms of construction of new lines, there still exists a huge gap between the existing facilities and the required facilities, as indicated in the Railway Infra Plan of Karnataka. Karnataka is comparable to Gujarat in terms of population. Though the numbers for Broad Gauge are comparable, the total route length per 1000 sq km is almost half of the existing figures for Gujarat, highlighting the shortfall in rail connectivity in the state.

Table 7: Comparison of rail route length per unit area and unit population

States	Area (sq km)	Population (in Crores)	Route length per 1000 sq km area (in km)		Route length per 100,000 population (in km)	
			Broad guage	All Type	Broad guage	All Type
Andhra Pradesh	2,75,045	7.62	17.8	18.8	6.4	6.8
Gujarat	1,96,024	5.06	15.9	27.2	6.2	10.5
Karnataka	1,91,791	5.27	16.0	16.9	5.8	6.2
Kerala	38,863	3.18	24.0	27.0	2.9	3.3
Maharashtra	3,07713	9.67	14.6	18.0	4.6	5.7
Tamil Nadu	1,30,058	6.22	19.3	31.8	4.0	6.6

Source: Railway Infra Plan, Karnataka, 2009

The above table highlights that Karnataka and Gujarat are comparable in term of area but in terms of rail route length in kilometers, Karnataka has just 56% of route length present in Gujarat.

The index of rail length per 1000 sq km area which is currently at 16 needs to improve to 32. To address the shortfall, another 3400 km of rail length is required to be developed in the state, which calls for an approximate investment of Rs.22,000 crore.

The sanctioned projects in the Union Railways Budget 2009 - 10 for Karnataka are provided in the table below.

Table 8: Union budget railway plans for Karnataka 2010

Union budget Rail way plans for Karnataka 2010
New trains
• Weekly Duronto from Bangalore to Delhi • Yeswanthpur- Howrah 4 times a week • New trains from Bangalore to Nagarcoil once a week • New trains from Bangalore to Tirupati thrice a week • Daily train from Shimoga to Mysore • New train from Bangalore to Nelamangala
New connections
• New line from Bagalkot to Kudachi • Survey for line between Marikuppam and Kuppam, Gauribidanur, Chikballapur
With state government under PPP model
• Line between Hassan and Bangalore, Kadur, Chikmagalur, Sakleshpur • Doubling of the Arsikere-Birur line • Gauge conversion between Chikballapur and Kolar
New lines likely under PPP model
• Shimoga- Harihar • Whitefield- Kolar • Talaguppa- Honnavar • Gadag- Haveri • Tumkur- Davangere • Bijapur- Shahabad • Dharwad- Belgaum
Other projects

Union budget Rail way plans for Karnataka 2010
• Adarsh stations at Chikballapur, Devanahalli, Doddaballapur, Gauribidanur, Yelahanka • Multi functional complexes at Tumkur, Yeshwantpur, Shimoga, Davangere • Uniformed attendents for aged and physically challenged at stations • Anti-collision devices for rail safety • Research and design units for wheels in Bangalore, likely at Railway Wheel Factory

Several new lines, gauge conversion and line doubling projects are currently underway. The list of ongoing and proposed projects is enclosed in **Annexure 3**.

2.1.3 Airports

Karnataka has five operational airports located at Bangalore, Mangalore, Hubli, Belgaum and Toranagallu (Bellary District). Currently, Bangalore and Mangalore airports cater to domestic and international destinations while the rest of the airports cater only to domestic destinations. The existing airport at Hassan is currently not operational.

In keeping with the state government's policy of providing air connectivity to all district headquarters and important industrial and tourist centers in the state, it is proposed to develop about 12 airports and 12 airstrips at important locations in the state. It is expected that this development would improve the existing index of 0.21 nos / 10000 sq km to 1.25 nos / 10000 sq km. The estimated investment is about Rs. 1500 crore by 2011.

The state government is planning to develop the airports at Bellary, Bijapur, Gulbarga and Shimoga on a public-private partnership basis. Civil enclave operations are proposed for the existing Indian Air Force base at Bidar to improve connectivity in the northern parts of the state. Further, the airport at Mysore is also proposed for expansion.

The cost for development of these airports is presented in the table below.

Table 9: Cost for development of regional airports

S No.	Location	Cost (Rs. Crores)
1.	Shimoga	111.0
2.	Gulbarga	111.0
3.	Bijapur	565.8
4.	Bellary	114.04
5.	Hassan (Phase 1)	600.0
6.	Mysore (expansion)	41.8
7.	Bidar	32.0
8.	Karwar	32.0
	Total	**1607.64**

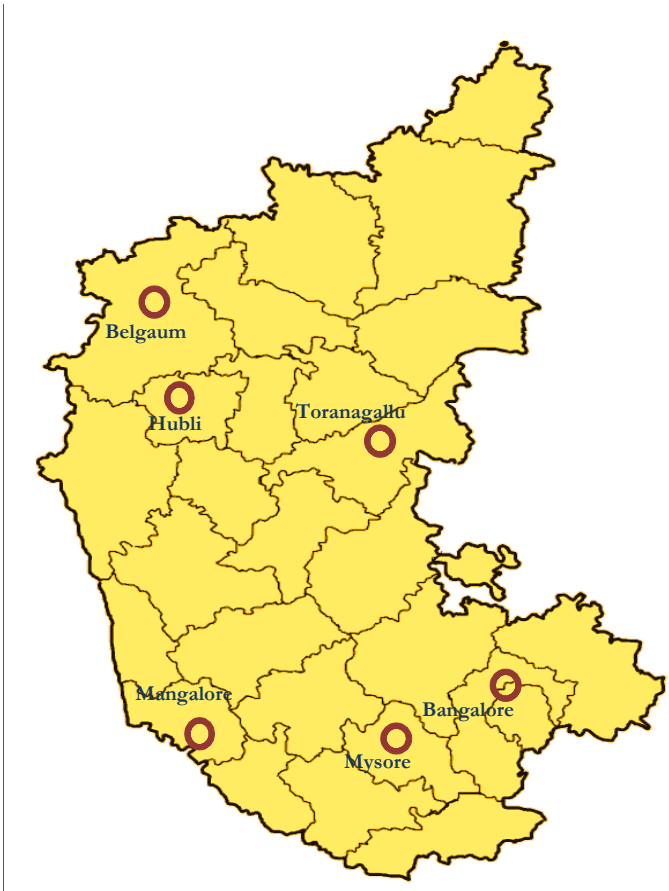


Figure 6: Existing airports in Karnataka

2.1.4 Ports

Karnataka is endowed with a vast coastline of around 300 km between Karwar (at the North) and Mangalore (at the South) flanked by Uttara Kannada, Udupi and Dakshina Kannada districts, with favourable and strategic port locations. The entire coastal belt as well as the adjacent districts are rich with mineral and natural resources and hence offer good scope for industrial investment. This belt is well connected by National Highways and the Konkan Railway broadgauge line, both running parallel to the coastline.

At present, there is only one Major Port in Karnataka viz., The New Mangalore Port. This is located at the southern end of the coastline and hence is predominantly being utilised by the southern districts of the State.

The coastline of the State is lined with ten minor ports between Karwar in the North and Mangalore in the south. The ten minor ports of the State are as follows:

- Karwar
- Belekeri
- Tadri
- Honnavar
- Bhatkal
- Kundapur
- Hangarkatta
- Malpe
- Padubidri
- Old Mangalore

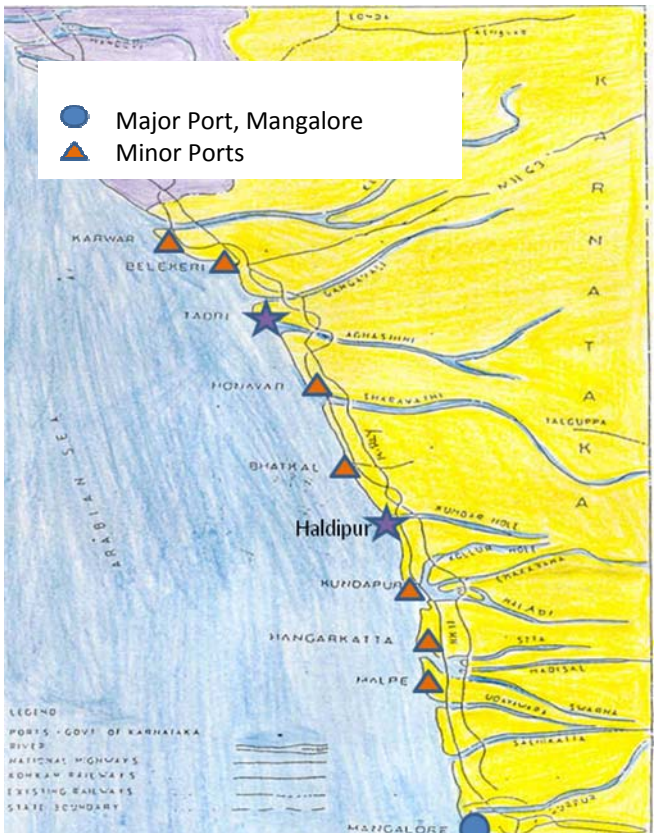


Figure 7: Existing ports in Karnataka

All these ports are under the administrative control of the State Ports and Inland Water Transport (IWT) Department.

The above ports are broadly classified into three categories:

a) One all weather Intermediate Port having direct berthing facilities for vessels of 9 m. draft and declared for handling all type of commodities for export and import viz., Karwar.

b) One Intermediate Port (seasonal) having direct berthing facilities for coastal vessels of 4.50 m. draft/ lighterage/ mechanised fishing vessels viz., Mangalore Old Port.

c) Remaining seven Ports are seasonal functioning as fair weather lighterage/ fisheries Ports, capable of handling sailing/ mechanical sailing vessels. These Ports also possess lighterage wharves, transit sheds and suitable stacking areas.

Presently, the ports in the state have capacities to handle about 62 million tonnes of cargo per annum (NMPT – 38 mtpa, Karwar – 15 mtpa & other ports – 9 mtpa). NMPT is currently operating at 97% capacity and the remaining ports have limited scope for expansion. Given that about 35 million tonnes of steel would be produced in the next 10 years, the requirement of the ports for handling coking coal and limestone would increase rapidly. In the next 10 years it is expected that the state would require a port capacity of 114 million tonnes per annum.

To address the shortfall in port capacities, the state Government is planning to develop two greenfield multi-commodity ports on the west coast at Haldipur and Tadri with a total capacity of 52 million tonnes. The government has received a Swiss Challenge proposal to develop the port at Haldipur with a 18 million tonnes per annum (mtpa) capacity. The port at Tadri with a 34 mtpa capacity in the initial phase is proposed to be developed on a PPP framework. The estimated cost of developing the port is Rs.3000 crore.

2.2 Transshipment Centers

Karnataka has nine transshipment centers catering to the imports and exports of the state. Four of these centers are located in Bangalore. These centres are:

- Bangalore International Airport (BIAL), Devanahalli
- Inland Container Deport, Whitefield (CONCOR)
- Container Freight Station, Whitefield (CWC)
- Container Freight Station at the old HAL Airport (Joint Working Committee – MSIL)

The other transshipment centers in the state are as follows:

- New Mangalore Port (NMPT), Mangalore

- Karwar Port
- Belekeri Port
- Container Freight Station, Mangalore (CWC)
- Container Freight Station, Belgaum (CWC)

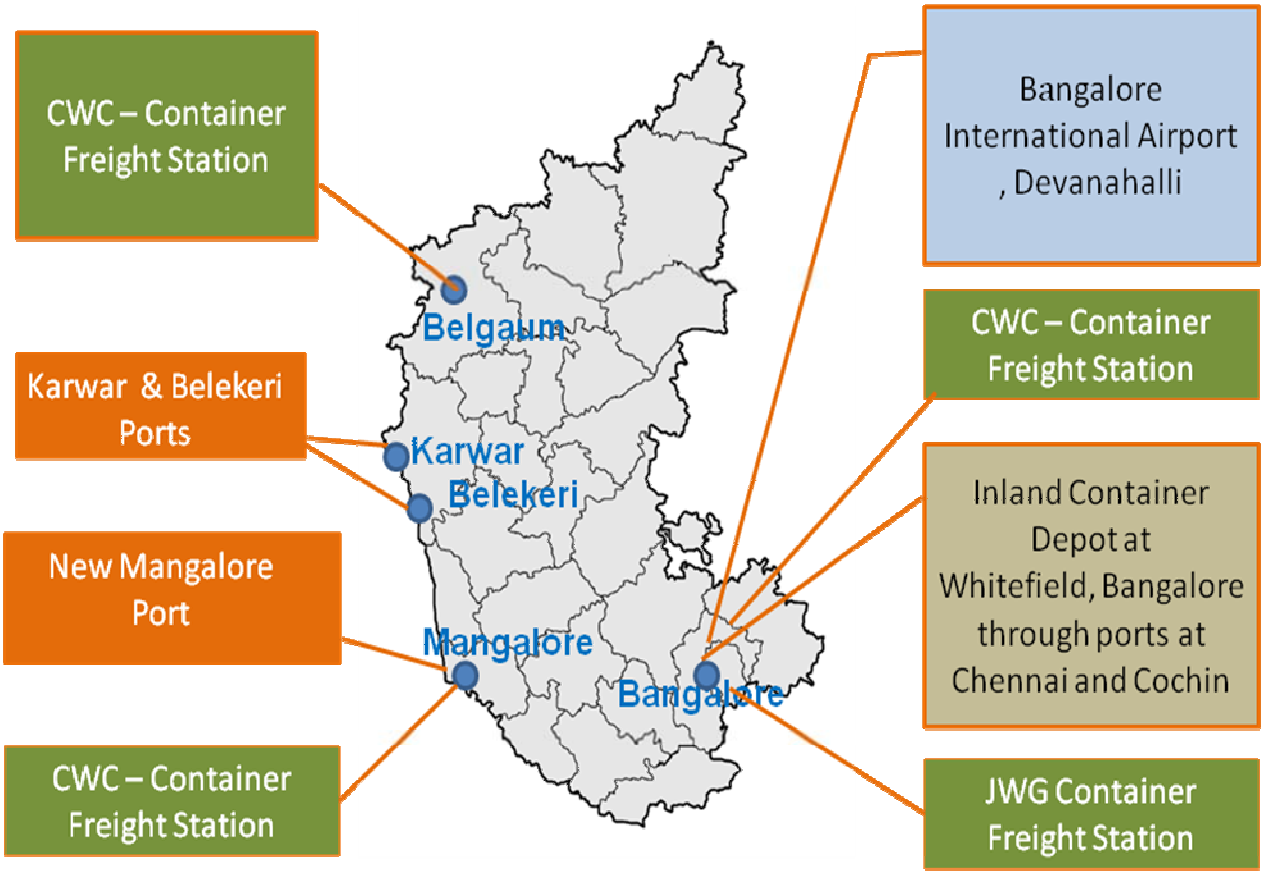


Figure 8: Transshipment centers in Karnataka

The bulk of import and export cargo is handled through the Inland Container Depot (ICD), Bangalore International Airport (BIAL) and the ports at Mangalore, Karwar and Belekeri. Container Freight Stations (CFS) of the Central Warehousing Corporation (CWC) are also involved in handling the import and export cargo of the state. The Container Freight Stations of the CWC are located at Bangalore, Mangalore and Belgaum. The CFS at Mangalore handles neglibile cargo while the CFS at Belgaum is utilized to 80% of its capacity. The CFS at Bangalore is fully utilized.

Another CFS is also operation at the old HAL airport of Bangalore by the Joint Working Group (JWG) and MSIL.

The traffic handled at the important transshipment centers is described below.

2.2.1 Inland Container Depot (Whitefield, Bangalore)

Inland Container Depot (ICD) at Bangalore is a dry port to facilitate imports and exports of goods in containers by sea to Chennai & Cochin. There are two container stacking yards, one international and another domestic yard (with a handling capacity of 1000 containers). The containers come in by rail from Chennai and Cochin and there are three rail lines capable of receiving and dispatching these containers.

Lately, bonded trucking has also started from Chennai. Sophisticated handling equipments are available for smooth operations of the cargo. The ICD is capable of handling 50,000 TEUs per annum. Currently ICD is handling about 21,000 loaded containers per annum and 12,500 empty containers per annum.

The principal commodities exported from ICD are electrical machinery, other machinery items, garments and coffee. The commodity-wise exports (in terms of value) from ICD for the period 2006 – 07 is provided in the table below.

Table 10: Exports from ICD, Bangalore in 2006 - 07

S No.	Commodity	Rs. Crore
1	Electrical Machinery	2724.35
2	Machinery Items	595.37
3	Garments	564.93
4	Coffee	351.28
5	Articles of Stones	338.65
6	Articles of Irons & Steel	210.03
7	Motor Vehicles & Parts	190.62
8	Pharmaceutical Products	190.52
9	Silk	164.02
10	Organic Chemicals/Products	123.04
Total		**5452.81**

Source: ICD, Bangalore

2.2.2 Bangalore International Airport (BIAL)

The international airport at Bangalore is the only airport in the state that handles inbound and outbound air cargo traffic. Cargo at BIAL is handled by two cargo concessionaires:

- Singapore Airport Terminal Services (SATS) and
- UK-based Menzies Aviation

The domestic freight traffic doubled between November 2008 and November 2009, which is mainly due to the commencement of freight handling by low cost airlines. SATS alone handled 63,419 tonnes of cargo between May 2008 and March 2009. Of this 47,191 tons was international cargo and 16,228 tons was domestic cargo.

The value of imports and exports at BIAL for 2007-2008 and 2008 – 2009 are as follows:

Table 11: Value of imports and exports at BIAL for 2007 - 2009

Years	Exports (Rs.)	Imports (Rs.)
FY 2008	1272737.15	2936530.62
FY 2009	1191590.62	2687074.68

Source: DGCI&S, Foreign Trade Statistics, 2009

Cashewnut shell liquid, chemicals, spices and coffee were the principal commodities exported from BIAL in FY 2009.

Table 12: Commodity wise exports at BIAL in FY 2009

Commodity	Quantity in Kg
Cashew Nut Shell Liquid	647550
Inorganic/Organic/Agro Chemicals	576792
Spices	106642
Coffee	82931

Commodity	Quantity in Kg
Fruits / Vegetable Seeds	75724
Dyes/Intmdtes N Coal Tar Chemicals	55923
Paints/Enamels/Varnishes Etc	36812
Tea	7546

Source: DGCI&S, Foreign Trade Statistics, 2009

The percentage wise exports and imports and places of export and import are provided in the table below:

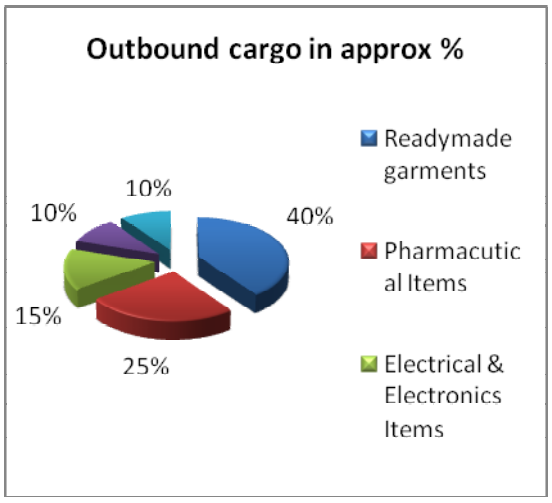
Table 13: Commodity wise exports and imports at BIAL

S No.	Commodity	Quantum (Approximate)	Places of export / import
Exports			
1.	Ready Made Garments	40%	U.S.A, U.K
2.	Pharmaceutical Items	25%	Africa
3.	Electrical & Electronics Items	15%	U.S.A, U.K & Canada
4.	Engineering Goods	10%	Europe, Africa
5.	Fruits & Vegetables	10%	Europe and Middle East
Imports			
1.	Electrical & Electronics Items	30%	From East
2.	Engineering Goods	30%	Europe
3.	Computer parts	15%	From East
4.	Automobile parts	15%	U.S.A , Europe
5.	Chemicals	10%	Europe

Source: Bangalore International Airport Limited

Readymade garments, pharmaceuticals, electrical & electronic items, engineering goods, fruits and vegetables constituted the bulk of exports from BIAL. Electrical & electronic items, engineering goods, computer parts, automobile parts and chemicals dominated the import traffic at BIAL.

The commodity – wise imports and exports at BIAL is depicted in the charts below.



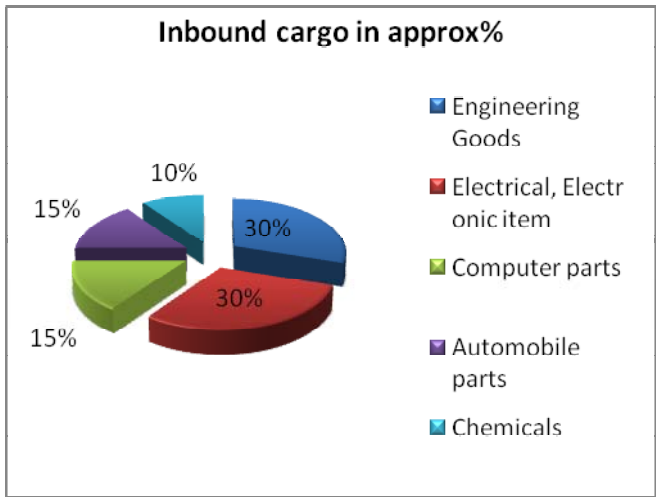


Figure 9: Commodity-wise split of inbound & outbound cargo from BIAL

Transportation of cargo to and from BIAL takes place mostly by road through Bangalore city.

2.2.3 New Mangalore Port (NMPT)

The New Mangalore Port is a modern all-weather port situated at Panambur, Mangalore about 170 nautical miles south of Mormugao port and 191 nautical miles north of Cochin port. The major commodities exported through the port are iron ore concentrates & pellets, iron ore fines, POL products, granite stones, containerized cargo, etc. The major imports at the Port are Crude and POL products, LPG, wood pulp, timber logs, finished fertilizers, liquid ammonia, phosphoric acid, other liquid chemicals, containerized cargo, etc.

Cargo to the port is transported by both rail and road. In both modes of transport there are limitations on the cargo movement, primarily because the route passes through the steep gradient of Western Ghats increasing the time taken for transportation.

The port has 14 berths and has a total operating capacity of 38 million tonnes. The port is being utilized to 97% of its capacity.

In 2008 – 09 the total cargo throughtput of the port was 36.7 million tonnes.

The details of exports and imports at NMPT for 2008 – 09 is provided in the tables below.

Table 14: Commodity-wise imports at NMPT for 2007 - 2009

S No.	Name of Commodity	2008-09	2007-08
		(In lakh tonnes)	
1	POL Crude (MRPL)	124.57	127.93
5	Coal	19.29	16.91

S No.	Name of Commodity	2008-09	2007-08
3	LPG	15.67	14.42
4	Fertilizer	9.04	8.30
5	Limestone	7.67	6.98
6	Iron Ore Fines	4.80	5.28
7	Edible Oil	4.76	3.74
8	POL (IOC/BPCL)	3.34	3.76
9	Other Liq. cargoes	2.74	2.95
10	Cement	2.71	2.16
11	Timber	1.16	1.97
12	Containerised cargo	2.18	1.54
13	Others	2.20	0.30
Total		**199.63**	**196.24**

Source: NMPT website

POL, coal, LPG, fertilizers and limestone are the principal commodities imported through the port.

Table 15: Commodity-wise exports at NMPT for 2007 - 2009

S.No	Name of Commodity	2008-09	2007-08
		(In lakh tonnes)	
1	Iron Ore Pellets	11.73	19.74
2	Iron Ore Fines	81.21	67.62
3	POL Products(MRPL)	69.69	71.67
4	Granite stone	0.28	0.49
5	Maize	1.10	0.56
6	Containerised cargo	1.85	1.65
7	Others	1.21	2.21
Total		**167.27**	**163.94**

Source: NMPT website

Iron ore pellets , iron ore fines and POL products are the major products exported out of NMPT.

2.2.4 Karwar Port

The port is an all weather port on the southern side of the Kali River and caters to the requirement of about 2.00 lakh square km of hinterland. NH 17 connects the port with the hinterland and the Konkan railway line also passes close to the port. At present the port caters to vessels with a draft of 8.25 m only, due to underwater physical obstructions in front of berths.

For other vessels, the cargo is loaded at anchorage through barges. Currently the port handles imports and exports of about 2.48 MT of various commodities and earns revenues to the tune of about Rs. 11 to 12 crores.

Total cargo handled at the port during 2008 – 09 was 2.96 million tonnes. The iron-ore throughput comprises approximately 80% of the total cargo at the port. Bellary – Hospet region is the major catchment region for the port. The iron ore from the catchment regions is brought to the port mainly by road.

2.2.5 Belekeri Port

This port is located 26 km south of Karwar and is a fair weather lighterage port. The port is open to traffic for about 8 fair weather months. The port has a vast stacking area and good network of roads. To handle foreign bound mineral cargo through the port, land has been allotted by the Government to the following two private entrepreneurs to develop this port by upgrading facilities through their own investment:

- M/s. Salgoankar, Mining Industries and Tungabadhara Minerals Pvt.Ltd.,Goa
- M/s. Adani Export Ltd., Ahmedabad

Iron ore forms 100% of the cargo that is handled at the port. All the cargo reaches the port from Bellary – Hospet region by road.

Konkan Railway line, NH 17 and NH 63 all pass close to the port and connect the port with the hinterland. Loading at the port is mainly carried out through barges using ship gears.

2.2.6 South Western Railway (Bangalore Division)

Karnataka falls mostly in the South Western Railway (SWR) zone, which is headquartered at Hubli. The other two divisions of the SWR are at Bangalore and Mysore. Most of the inland cargo both interstate and intrastate handled by railways is at the three divisions.

The cargo handled at the Bangalore Division in 2008 – 09 is as follows:

Table 16: Cargo handled by the SWR Bangalore division in 2008 - 09

Commodity	Tonnes
Container	898465
Cars	27518
Cement	23436

Commodity	Tonnes
Foodgrains	22869
Machinery	28824
Others	156315
TOTAL	**1157427**

Source: SWR, Bangalore Division

Container cargo, cars, cement and foodgrains comprised the bulk of the cargo handled at the division. The cargo is transported by road and rail to end customers directly or to one of the transhhipment centers for export.

2.3 Summary

The key issues pertaining to the transshipment centers are summarized below.

- Imports / exports from Karnataka mainly take place through the four centers – NMPT, Karwar, BIAL and the dry port at Bangalore (ICD).
- Bulk of the freight is handled at ICD and BIAL.
- The transportation connectivity from the hinterland is well established but severely congested due to the high traffic density on both road and rail.
- The port at Karwar and Belekeri are minor ports and are mainly used for exports of iron ore from the Bellary – Hospet region of the state.
- Though the port at NMPT is a major port and there is a freight handling station at Mangalore, it is currently not being utilized to its full potential due to the weak connectivity from the hinterland.
- Besides export / import cargo, there is a large quantum of inland cargo that also moves inter-state and intra-state. The primary mode of transportation is by road and rail and also some cargo is transported by air.

3. INDUSTRY ANALYSIS - EXISTING SCENARIO & TRANSPORTATION ROUTING

This Chapter discusses in detail the transportation logistics of select key industries in the state. The criteria adopted for selection of the industries is as follows:

- Share of contribution to GSDP (in terms of value)
- Key industries in the state (in terms of production & export volumes)
- Freight volume movement (in terms of density) by different modes of transport

Based on these criteria the industries selected for a detailed analysis are as follows:

- Agriculture / horticulture
- Cement
- Iron ore
- Steel
- Automobiles / auto components
- Textiles

3.1 Agriculture / Horticulture

Agriculture / horticulture is a dominant industry in the state, and contributes to nearly 25% of the state's GDP. The net sown area is approximately 105 lakh hectares and accounts for nearly 54% of the geographical area of the state. At the national Level, Karnataka stands first in floriculture, second in the production of spices & plantation crops and third in coconut production. The state occupies the fifth place in the production of fruits and vegetables.

3.1.1 Agriculture

The agricultural crops are classified as cereals, pulses, garden / plantation crops and sugarcane. The principal agricultural crops grown in the state are given in the table below.

Agriculture crops	Key crops produced
Cereals	Rice, Jowar, Maize, Ragi and others
Pulses	Tur
Garden / Plantation	Coconut, arecanut, cashewnut, coffee, cotton

Sugarcane	


KARNATAKA
Agriculture
N
MAHARASHTRA
GOA
ARABIAN SEA
KERALA
TAMIL NADU
Manjra
Karanja
Chulkinala
Diksanga
Mulamari
Nagathana
Benithora
Ghatprabha
Hidkal
Malprabha
Narayanpur
Bhutevadi
Kanakanala
Sattinala
Beda
Hathikoni
Hiehalla
Bachanki
Dharma
Varada
Hagaribommanahalli
Kolluru
Ambligola
Dharma
Varada
Madamagsur
Varahi
Anjanapura
Vanivilasa
Linganamakki
Sagara
Sita
Tunga
Borankanave
Jaipadahalla
Upper Shimsha
Chamarajsagar
Manchanabele
Netravan
Yagachi
Marakonahalli
Byramangala
Marconhalli
Kanva
Kattepur
Kattemalavadi
Payaswani
Arkavathy
Nugu
Chengavadi
Lakshmantirtha
Suvamamukhi
Chikkahole
LEGEND
Oil Seeds
Millets
Rice
Sugarcane
Coconut
Mango
Cashewnut
Ragi
Orange
Red Chilli
Potato
Maize
Rice
Cotton
Jowar
Wheat
Betal Leaf
Groundnut
Map not to Scale
Copyright © 2007 Compare Infobase Limited

Figure 10: Agriculture Map of Karnataka

Cereals

The principal cereal crops produced in the state are rice, maize, jowar and ragi. The total area under cultivation of cereals is approximately 54 hectares and the total production is about 100 lakh tonnes.

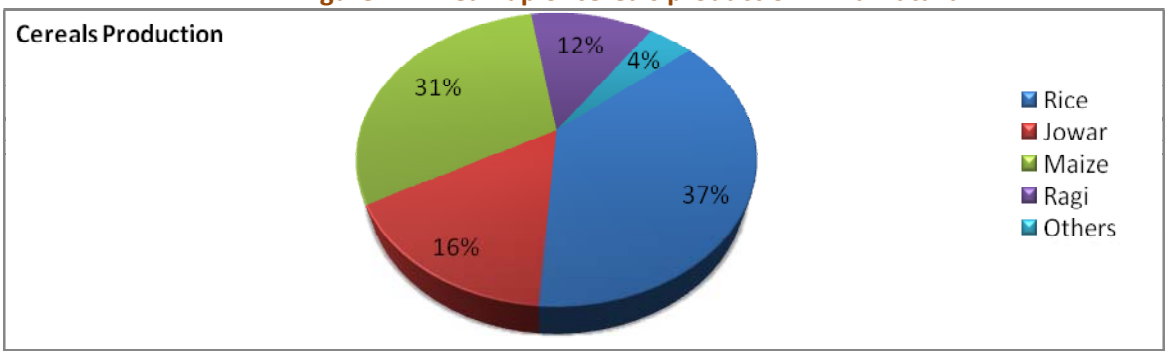
The crop-wise details and the regions of production are provided in the table below.

Table 17: Details of cereals production (2008 – 09)

Cereals	Area cultivated (lakh hectares)	Production (lakh tons)	Key regions of production
Rice	15.05	37.17	Davangere, Mysore, Mandya, Shimoga, Raichur
Maize	10.50	30.42	Mysore, Kodagu, Davangere, Dharwad, Shimoga
Jowar	14.47	15.81	Mysore, Mandya, Kodagu, Belgaum, Raichur
Ragi	8.11	11.92	Koppal, Gulbarga, Bellary, Dakshin Kannada, Haveri
Others	5.74	4.39	Kodagu, Mysore, Belgaum, Dharwad, Haveri
Total	**53.87**	**99.71**	

Source: Directorate of Economics and Statistics (Production anticipated figures)

Figure 11: Break-up of cereals production in Karnataka



Rice and maize together contribute to more than 50% of the cereals production in the state.

Pulses

Pulses are produced in Mysore, Bidar, Chamrajnagar, Hassan and Belgaum. A total of 9.06 lakh tonnes of pulses were produced on an area of 21.25 hectares. Tur is the principal pulse crop produced in the state. About 2.55 lakh tonnes of Tur was produced in the year 2008 – 09 on an area of 5.96 lakh hectares.

Garden / Plantation crops

The principal garden / plantation crops produced in the state are coconut and cotton. The other garden / plantation crops produced are arecanut and cashews. Approximately 1653 million coconuts were produced in 2008 – 09 and about 6.54 lakh bales of cotton was produced during the same year.

The crop-wise details and the regions of production are provided in the table below.

Table 18: Details of garden / plantation crops (2008 – 09)

Garden / plantation crops	Area under cultivation (lakh hectares)	Production	Key regions of production
Coconut	4.08	1653 Million nuts	Mysore , Tumkur , Chitradurga , Mandya, Chikmagalur
Arecanut	1.8	2.35 lakh tons	Chikmagalur, Dakshin Kannada, Shimoga, Tumkur, Davangere
Cashew*	0.7	1.22 lakh tons	Dakshin Kannada, Udupi, Kolar, Belgaum, Uttar Kannada
Cotton	3.72	6.54 lakh bales	Belgaum, Bagalkot, Gadag, Dharwad

Source: Directorate of Economics and Statistics (Production anticipated figures)
** Figure for 2006-07 from Dept. of Horticulture*

Cotton

Karnataka stands second in the production of cotton among the south indian states. Cotton is mainly produced in central Karnataka and some parts of south Karnataka. The main cotton producting regions in the state are Hiriyur, Davangere, Chamrajpura, Bellary, Hosur, Periyapatna, Hubli, Mysore and Bangalore. The quantum of cotton production in the state is steadily incresing. The trends in cotton production over the last five years are presented in the table below.

Table 19: Details of cotton production (2004 – 2008)

Cotton production	2004	2005	2006	2007	2008
In Lakh bales	179	243	241	280	307

The cotton bales produced in Karnataka are exported to Andhra Pradesh, Tamilnadu and Maharashtra for weaving. Cotton textiles made in Karnataka are exported throu gh mainly Mumbai, Chennai and Tuticorin

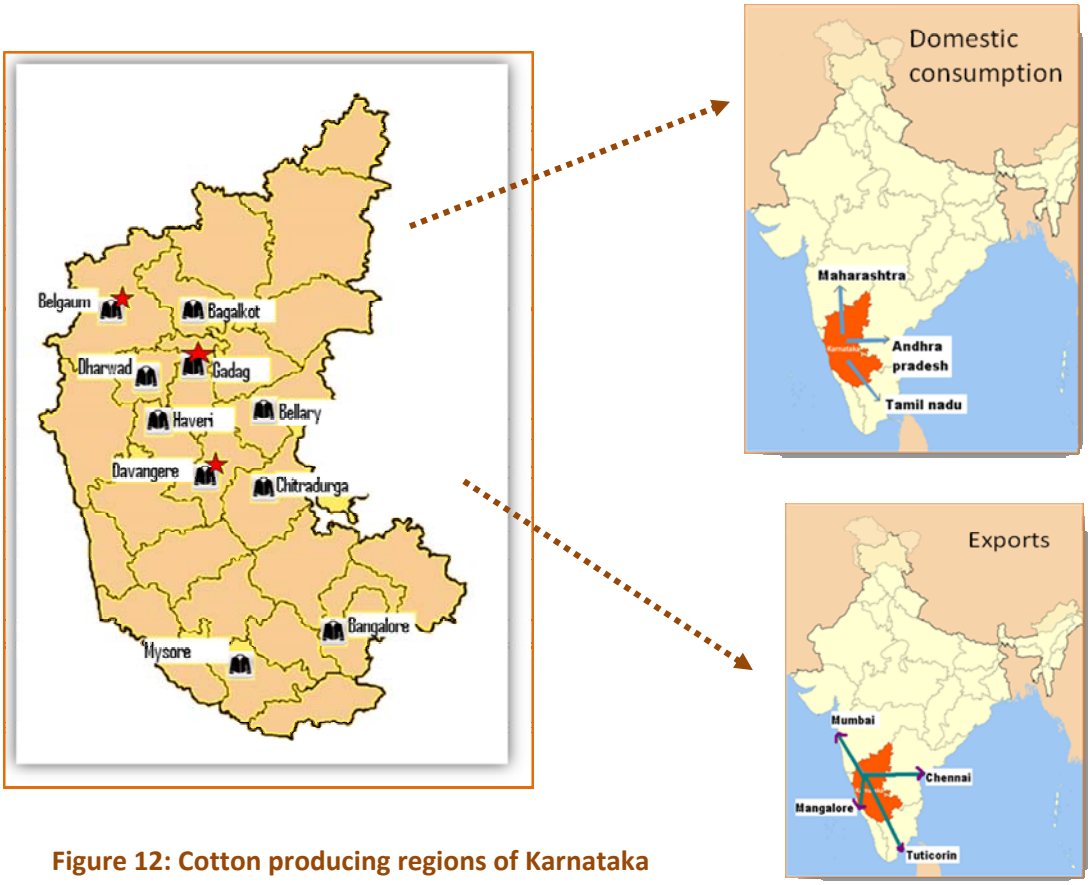


Figure 12: Cotton producing regions of Karnataka

Key Logistics Issues

- In Karnataka there are very few textile processing mills.
- Not many consumption centers due to insufficient logistics facilities and infrastructure.

- Though cotton grows in Karnataka it is generally exported to Tamilnadu, Andhra Pradesh, Maharashtra.
- Transportation cost is very high as cotton has to be sent over long distances by road and is highly prone to fire hazards.

Sugarcane / sugar

Karnataka ranks fourth in the country in terms of sugarcane production. The area under cultivation is approximately 2.74 lakh hectares and a total of 221.86 lakh tons of sugarcane was produced in 2008 – 09.

In terms of production of sugar, the state ranks 3rd in the country. About 30.18 lakh tonnes of sugar was produced in 2007 – 08. There are 41 sugar factories in the state which are located at Konnur, Jambagi, Varuna, Hosur, Koppal, Margur, Madapura, Yelgur, Dandeli and Arsanghatta.

The Sugar Industry in Karnataka contributes around Rs. 36 crore per year to the state exchequer in central excise duty. It also contributes more than Rs. 900 crore in the form of turnover tax and sales tax to the state exchequer.

Sugar Industry in Karnataka can be divided into 2 groups that are the unorganized sector which comprises of the producers of the traditional sweeteners such as gur and khandsari and the organized sector which consists of the sugar mills. The manufacture of khandsari and gur is considered to be rural industry and are produced in huge quantities. The gur and khandsari are consumed mostly by the rural people as sources of nutrition and also as sweeteners.

Sugar is exported to North and North eastern parts of the country and also to Afghanistan, China and Bangladesh. The key exporting ports for Karnataka are Mumbai and Tuticorin.

The map above shows the regions of sugarcane cultivation and the location of sugar mills in the state.

3.1.2 Horticulture

The horticultural crops are classified as fruits, vegetables, spices, flowers and medicinal & aromatic (MAP) plants. The principal horticultural crops grown in the state are:

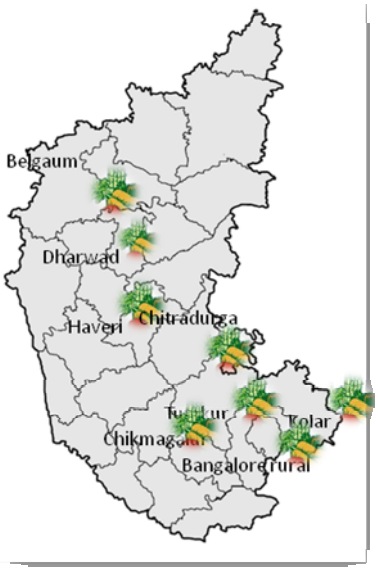
Horticulture crops	Key regions of production
Fruits	Mango, Banana, Guava, Sapota, Grapes, Jack, Papaya, Citrus, Pineapple, Fig, Annonaceous fruits, Avocado, Ber, Rose apple
Vegetables	Potato, Tomato, Brinjal, Cole crops, Peas, Beans, Okra, Radish, Beetroot, Carrot, Tapioca, Sweet potato, leafy vegetables, capsicum, gourds and cucurbits
Spices	Pepper, Cardamom, Ginger, Turmeric etc. Vanilla is also being grown
Flowers	Traditional flower crops such as Chrysanthemum, Jasmine, Crossandra, Rose, Tuberose, Aster, Marigold, Champaka, Roses, Gerbera, Carnation, Heliconia etc.
MAP	Medicinal plants like Sarpagandha, Ashwagandha, Ghritakumari, Ayapana, Anantamul, Antamul, Chirata and aromatic plants like lemon grass and Citronella.

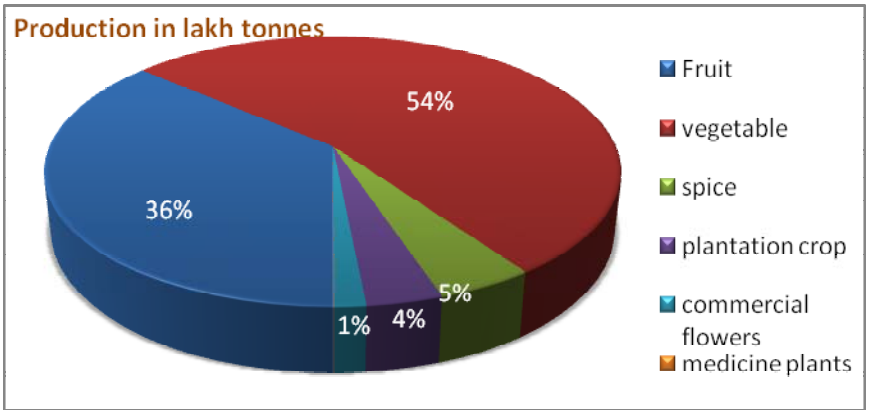
The key regions for horticulture production in the state are Belgaum, Dharwad, Haveri, Tumkur, Kolar, Chitradurga, Chikimagalur and Bangalore rural. The region – wise details of horticulture production is enclosed in **Annexure 4**. The summary of area and production details of horticulture crops in the state is provided in the table below.

Table 20: Area and production details of horticulture crops (2008 – 09)

Name of the crop	Area (lakh hectare)	Production (lakh tonnes)
Fruits	2.78	47.36
Vegetables	4.12	70.15
Spices	2.45	6.04
Flowers	0.23	1.92
Medicinal & Aromatic plants	0.02	0.01
Total	**17.25**	**130.26**

Source: Department of Horticulture





Fruits

The principal fruit crops that are produced in the state are mango, banana, citrus fruits, guava, sapota, grapes, pomogrenate and papaya. The details of each of these crops and the key regions of production are provided in the table below.

Table 21: Details of production of fruits (2008 – 09)

Fruits	Area under cultivation (hectares)	Production in Metric Tons	Key regions of production
Mango	135546	1437204	Kolar , Tumkur, Bangalore rural, Chikmagalur, Mandya
Banana	65071	1667578	Tumkur, Chikmagalur, Shimoga, Mysore, Chitradurga
Citrus varieties	12759	243308	Bijapur, Gulbarga, C.K.Lur, Raichur Chitradurga
Guava	6727	131027	Kolar Bangalore(Urban), Bangalore (Rural) Dharwad Koppal
Sapota	27327	295995	Kolar, Belgaum, Bangalore (Rural), Dharwad C.K.Lur
Grapes	12580	225226	Kolar, Bangalore (Urban) and (Rural), Bagalkot, Bijapur
Pomegrenate	12403	133433	Chitradurga, Tumkur, Bagalkot, Koppal
Papaya	4441	330669	Chitradurga, Davangere, Bellary,Gulbarga, Kodagu

Source: Directorate of Economics and Statistics (Production anticipated figures)

Vegetables

The principal vegetables that are grown in the state are potato, tomato and onions. The details of each of these vegtables and the key regions of production are provided in the table below.

Table 22: Details of production of vegetables (2006 – 07)

Vegetables	Area under cultivation (hectares)	Production in Metric Tons	Key regions of production
Potato	65518	682146	Bangalore rural, Kolar, Belgaum, Hassan, Chikmagalur
Tomato	46056	1315730	Kolar, Belgaum, Haveri, Bangalore (Rural), Mandya
Onion	152286	2721344	Dharwad, Chitradurga, Bagalkot , Gadag, Bijapur
Others	148118	2295657	

Source: Department of Horticulture

Spices

The principal spice crops that are grown in the state are pepper, cardamom, ginger, turmeric, dry chillies, tamarind and garlic. The details of each of these spice crops and the key regions of production are provided in the table below.

Table 23: Details of production of spice crops (2006 – 07)

Spices	Area under cultivation (hectares)	Production in tons	Key regions of production
Pepper	15150	8741	Kodagu, Hassan, Chikmagalur, D. Kannada, Shimoga
Cardamom	24236	7484	Kodagu, Hassan, Chikmagalur
Ginger	20489	198181	Hassan, Kodagu, Shimoga, Chikmagalur, Bidar
Turmeric	12721	82471	Belgaum, Bagalkot, Bidar, C.R.Nagar
Dry chilies	137851	164303	Haveri, Dharwad, Bellary, Gadag, Raichur
Tamarind	15674	80020	Kolar, Tumkur, Bangalore (Rural), Mandya, Chitradurga
Garlic	5192	43272	Dharwad, Belgaum, Bijapur, Haveri, Bidar

Source: Department of Horticulture

Flowers

The principal flowers that are grown in the state are marigold, jasmine and chrysanthemum. The details of each of these flower plants and the key regions of production are provided in the table below.

Table 24: Details of production of flowers (2006 – 07)

Flowers	Area under cultivation (hectares)	Production in tons	Key regions of production
Marigold	5664	57329	Kolar, Haveri, Chamrajnagar, Mandya
Jasmine	4493	29090	Bangalore rural,Chitradurga, Davangere, Gadag, Bellary
Chrysanthemum	4046	56474	Bangalore, Davangere, Tumkur, Haveri, Mandya
Others	8814	49047	

Source: Department of Horticulture

3.1.3 Transportation

The transportation of the agricultural / horticultural produce in the state is mostly by road, except for foodgrains which is transported by both road and rail. The perishable produce such as fruits and vegetables are transported from the farms to the nearest market where they are consumed.

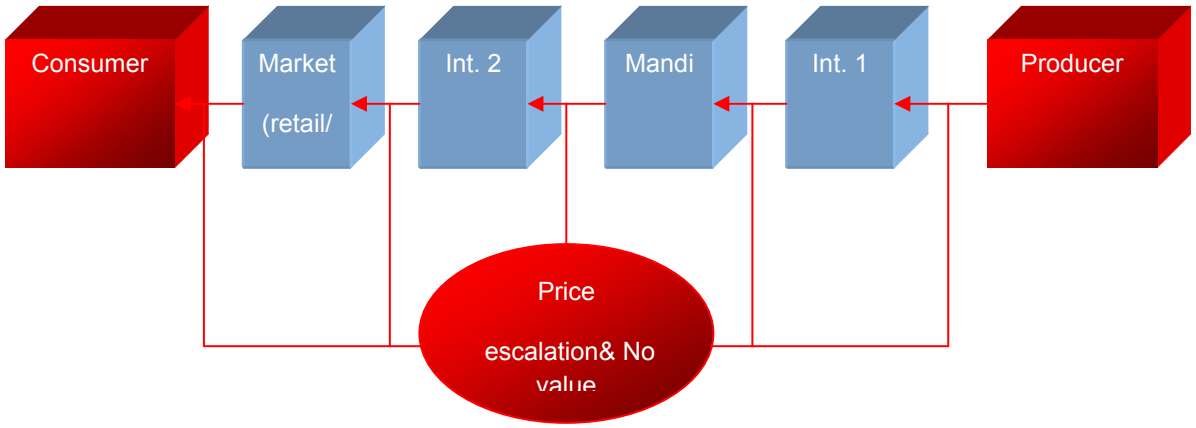
3.1.4 Key logistics issues

Agri marketing supply chain prevailing in the state lacks a systematic approach. About 75 % of the farmers in the state sell their produce at the farm level due to:

- Inability to go to distant mandis on account of lack of facilities
- Expensive and inefficient transportation system
- Malpractices at each level of value chain
- Long and detrimental marketing channel
    - Adds cost but no value to the product

- Blocks the flow of market information resulting in exploitation of the farmers

- Inefficient transportation system resulting in wastage of the farm produce



The transportation and air freight costs are quite high, to an extent of 8%-10% of the total marketable cost of the product. Often, this leads to distress sale by farmers. Long and detrimental marketing channel

The sector lacks sustained investment in planned infrastructure like warehouses, transport centres, integrated cold chains etc.Infrastructure pertaining to cold chain infrastructure is very sporadic and the concept of “Integrated cold chain” is non existent.

Major investments on these infrastructures have come from government agencies like Central Warehousing Corporation (CWC), State Warehousing Corporation (SWC), CONCOR etc. There is a strong need for integrated operations in the sector and setting up of Agri Logistics Hubs (ALH) in the state. The storage & distribution components and ALH are dealt with in Volume II of the Logistics Storage & Distribution Report.

3.2 Cement

Karnataka produces 7.5% of India’s production and 23% of South India’s production of cement. The key production regions are Gulbarga and Bagalkot. In the year 2007-08, 107.74 lakh tones of cement was produced in the state.

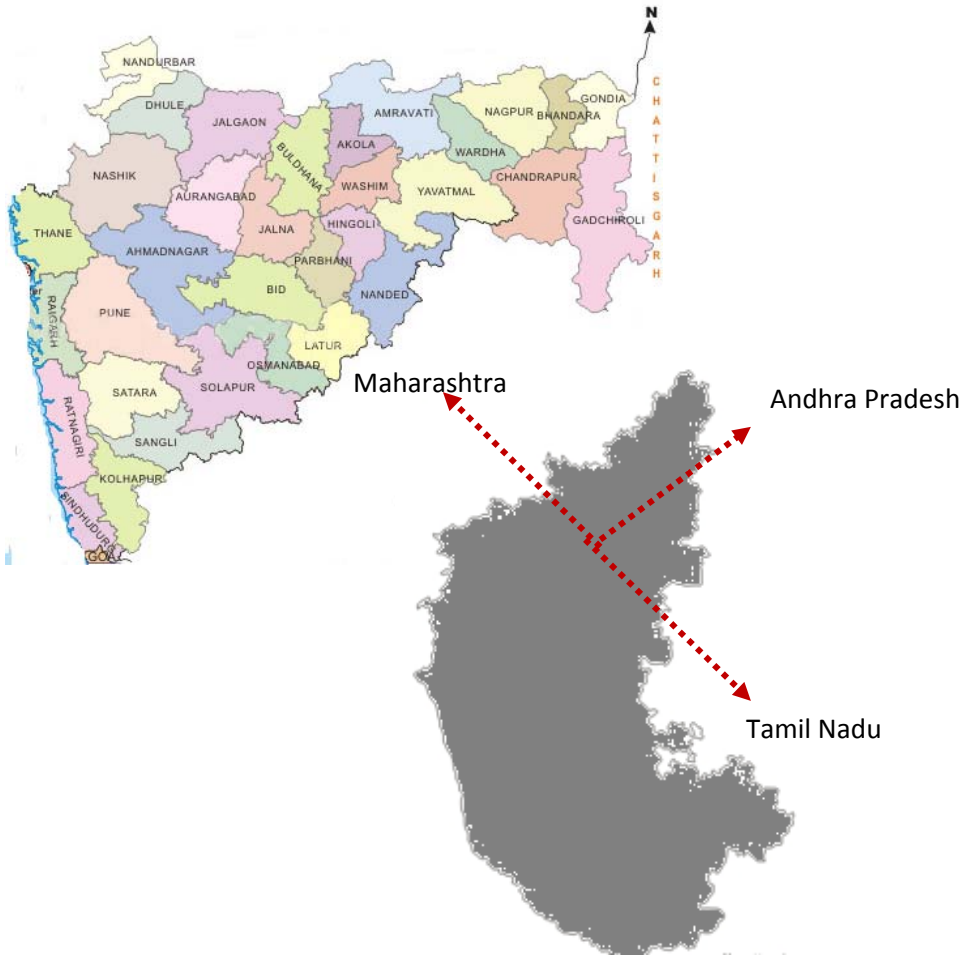
3.2.1 Transportation

Cement produced in Karnataka is mostly consumed within the state and the excess capacity is exported to Mumbai and Goa. Some cement is also sent to Andhra Pradesh and Chhattisgarh. The key locations for export are Miraj, Sindhidurg, Kolhapur, Kunnur, Sangli, Raigarh, Osmanabad, Anantpur, Sholapur, Cuddapa, Ratnagiri and Hyderabad.

Transportation of cement is balanced between road and rail based on regional demand. Internal consumption of cement within the state is predominantly transported by road. However, the transportation to neighbouring states is by both road and rail.

The production and export regions for cement are depicted in the figure below.

Figure 13: Cement exports from Karnataka



3.2.2 Key Logistics Issues

The key issues in the cement industry are highlighted below.

- Freight accounts for 25-28% of the total cost of sales of cement. Both the road and rail freights have increased at a substantially higher rate as compared to the cement prices.
- Access to limestone reserves (principal raw material for the manufacture of cement) is limited.
- Supply of power from the state grid is an issue. However, nowadays producers are relying more on captive power, but the shortage of coal and volatile fuel prices remain a concern.
- Restricted wagon availability for transportation by rail.

3.3 Iron ore

Karnataka is blessed with rich mineral resources, especially iron ore. The iron ore rich districts in the state are Bellary - Hospet and Chitradurga – Tumkur. The iron ore production in the state is steadily increasing at a CAGR of 7%. The trends in iron ore production over the last few years are provided in the table below.

Table 25: Trends in iron ore production (Million Tonnes)

District	2001-2002	2002-2003	2003-2004	2004-2005	2005-2006	2006-2007	2007 – 2008	2008 - 2009
Bellary	6.00	15.90	25.40	31.50	36.30	30.28	36.33	35.70
Bagalkot	0.06	0.03	0.33	0.80	1.20	1.54	1.72	1.93
Chikmagalur	5.60	5.70	5.20	4.50	2.90	0	0	0
Chitradurga	1.30	1.30	2.20	2.30	2.30	2.59	3.00	7.00
Tumkur	0.00	0.20	1.10	1.70	1.60	1.80	2.00	3.00
TOTAL	**12.96**	**23.13**	**34.23**	**40.80**	**44.30**	**36.21**	**41.28**	**47.63**

Karnataka accounts for nearly 32% of country's iron ore exports. Bellary – Hospet region alone in Karnataka accounts for 88% of the State's share of exports. Tumkur, Bagalkot and Chitradurga districts account for the rest.

Table 26: Exports of iron ore from Karnataka vis-à-vis all India exports

Years	All India			Karnataka			
	Production	Domestic Requirement	Surplus for Export	% of National Share	Production	Domestic Requirement	Surplus for Export
2007 - 08	205.09	100.82	104.27	22.5%	46.14	10.20	35.94
2008 - 09	221.17	112.64	108.54	21.4%	47.35	12.40	34.95

Source: iDeCK Analysis

The production and export details from Bellary – Hospet region in the state is provided in the table below.

Table 27: Exports of iron ore from Bellary – Hospet region

Years	Bellary – Hospet Region			
	% of State Share	Production	Domestic Requirement	Surplus for Export
2007 - 08	85.8%	39.6	7.7	31.9

2008 - 09	75.4%	35.7	8.4	27.3

The production and export details from Chitradurga - Tumkur region in the state is provided in the table below.

Table 28: Exports of iron ore from Chtiradurga – Tumkur region

Years	Chitradurga - Tumkur Region			
	% of State Share	Production	Domestic Requirement	Surplus for Export
2007 - 08	10.8%	5.00	2.50	2.50
2008 - 09	21.1%	10.00	4.00	6.00

As indicated in the maps above, from the Bellary – Hospet region the mined ore is exported through the ports at Mormugao, New Mangalore, Karwar, Belekeri, Krishnapatnam and Chennai. The mined ore from Chitradurga – Tumkur region is exported largely through New Mangalore port and some quantum throught the Krishnapatnam port.

3.3.1 Transportation

The transportation of iron ore from the Bellary – Hospet region to the exporting ports on the west and east coast is by a mix of rail and road.

- RAIL - To reach Mormugao and NMPT Ports
  - Bellary – Hubli – Londa – Vasco & Konkan Railway
  - Bellary – Chikjajur – Birur – Arsikere – Hassan & HMRDC
- ROADS – To reach Karwar, Belekeri, NMPT Ports
  - Bellary – Hubli – Ankola (NH-63) – Mangalore(NH-17)
  - Bellary – Hubli (NH-63) – Tadas – Kumta (SH-69) – Mangalore (NH-17)
  - Bellary – Challakere – Hiryur – Huliyar – Tiptur (SH-47) – Hassan (SH-71) – Mangalore (NH-48)

- The modal split of iron ore transportation to ports on the west coast is provided in the table below.

Table 29: Modal split of iron ore transportation to west coast ports from Bellary – Hospet region

Port	2006 – 07 (Million Tonnes)			2007 – 08 (Million Tonnes)		
	Total	By Rail	By Road	Total	By Rail	By Road
NMPT	5.98	4.79	1.19	8.73	4.08	4.65
Belekeri	4.06	Nil	4.06	6.08	Nil	6.08
Karwar	1.71		1.71	1.96	Nil	1.96
Mormugao & Panaji (Non-Goan ore)	9.6	2.47	7.13	8.00	2.73	5.27
TOTAL	**21.35**	**7.26**	**14.09**	**24.77**	**6.72**	**18.05**

Source: iDeCK Analysis

The transportation of iron ore from the Chitradurga – Tumkur region to the exporting ports on the west and east coast is by a mix of rail and road.

- RAIL – To reach NMPT
  - Hassan – Mangalore
- ROADS – To reach NMPT
  - Tumkur – Tiptur (NH-206) – Hassan (SH-68A) – Mangalore (NH-48)
  - Tumkur – Kadur (NH-206) & Kadur – Mangalore (SH-64)
  - Chitradurga – Hiryur – (Sira) – Huliyar (Tumkur) – Tiptur (SH-47) – Hassan (SH-71)
  - Chitradurga – Mangalore (NH-13)

3.3.2 Key Logistics Issues

Connectivity to ports is partly by road and partly by rail, which increases freight cost and makes transportation logistics difficult.

The key transportation issues pertaining to road movement is summarized below:

- Important roads for freight movement:
    - NH 63 is the primary road for ore movement to the west coast from the Bellary Hospet area and would continue to be the prime carrier.
    - SH 69 passes through the Sirsi ghat section which has a steep gradient. Therefore few vehicles would use this road.
    - NH 17 is currently being used by trucks carrying ore to Mangalore from the Bellary Hospet region.
    - NH 48 is the crucial road link between Hassan and Mangalore and provides the last mile connectivity to the port from other regions as well.
- The road routes mentioned above are badly damaged and in a poor condition, requiring immediate upgradation.

The key transportation issues pertaining to rail movement is summarized below:

- Important rail routes for freight movement:
    - Hubli - Londa – Vasco Rail line (From Bellary – Hospet to Mormugao port)
    - Hassan – Mangalore Rail Line (From Bellary – Hospet & Chitradurga – Tumkur Regions To NMPT)
    - Konkan Railways (From Goa to NMPT)
    - Birur – Arsikere – Hassan (From Bellary –Hospet to NMPT)
- The immediate requirements are:
    - capacity augmentation on the above lines
    - availability of rakes
    - technological interventions to improve efficiency on the existing lines
- The proposed Hubli – Ankola and Honnavar – Talaguppa lines would improve connectivity to west coast ports.

3.4 Steel

The Bellary – Hospet region is home to a large number of iron and steel industries owing to the rich mineral resources of iron ore. The industries are clustered in the Vijaynagar region with Jindal Steel Works (JSW) having India's largest private steel manufacturing facility.

Sathavahana Ispat Ltd. was the first Pig Iron plant to be setup in the region. Kirloskar was the next to follow with their Pig Iron plant. Mukund Steels and Kalyani Steels have also started industries in this area. Mineral Enterprises Limited (MEL) and MSPL also have plans to set up steel plants in the region.

3.4.1 Transportation

Transportation of steel is mostly by rail. The raw material like coal and iron ore are brought to the steel plants mostly by rail. Imports of coal in the state are mainly through NMPT.

3.4.2 Key Logistics Issues

The key logistics issues faced by the industry are highighted below.

- Availability of essential raw materials such as fly ash and coking coal is limited, making the industry rely more on exports. This increases the input costs of the industry. About 45% of the input costs can be attributed to costs of coal, fuel and electricity.
- Poor quality of basic infrastructure like roads, ports, etc make transportation dificult and more expensive.
- Cost reduction is an important driver for improving competitiveness in the sector. To ensure a competitive advantage, steel makers have to concentrate on reducing their operating costs, working capital costs and inventory costs. An efficient supply chain management needs to be put in place

3.5 Automobile / auto components

Karnataka has a 67% market share in the automobile segment. The key automobile manufactures are:

- TVS Motor Company at Nanjangud, Mysore

- Toyota Kirloskar Motor Ltd at Bidadi, Bangalore
- Tata (Marco polo) at Hubli
- Reva Electric Car Company

The key manufacturers of auto components are:

- Motor Industries Co. Ltd (MICO)
- VST Tillers Tractors Ltd

3.5.1 Transportation

The transportation of automobiles is mostly by rail, though movement intra state and to neighbouring states happens by road. The key roads for automobile movement are NH 4 and SH 17 for exports. Within the state distribution of automobiles is on the NH and SH roads connecting the major district headquarters. Rail movement of automobiles is through ICD, Bangalore and the South Western Railways (Bangalore division).

3.6 Textiles

Karnataka is a major producer of silk and cotton and has a high potential for exports. The state produces 70 per cent of India‘s silk and is an important apparel sourcing destination for the global market. Companies such as Gokaldas Exports, export apparel to major global fashion labels. There are about 1,800 - 2,000 textile and garment units in Bangalore and nearby textile clusters.

The districts of Bangalore, Mysore, Belgaum, Dharwad and Tumkur are the most popular silk producing regions as they have the perfect sub humid to dry semi arid climate.

3.6.1 Transportation

The textiles manufactured in the state are taken by road to ICD in Whitefield and BIAL from where they are exported. The key roads for textile movement in the state are NH 4, NH 7 and SH 17.

3.6.2 Key logistics issues

The state has a high potential for exports of cotton and silk which has not been fully realized. The reasons for this being:

- Insufficient infrastructure in terms of processing mills and an effective marketing plan and strategy.
- Cotton is mostly produced and sent to neighbouring states to be processed to cloth due to lack of processing mills in the state.
- Transportation is mostly by road which increases the overall cost of sales.
- Cotton is prone to fire hazards and requires safe storage facilities.

4. DEMAND PROJECTIONS & GAP ASSESSMENT IN TRANSPORT INFRASTRUCTURE

The industry-wise quantum of production for the next three decades has been estimated based on the past production CAGR. The proposed projects in the pipeline for various industires have also been reviewed. The industry-wise production estimates and the proposed projects are presented in this Chapter.

4.1 Agriculture & Horticulture

The principal agriculture crops grown in the state are cereals (rice, jowar, maize, ragi), pulses (mainly tur), garden / plantation crops (coconut, arecanut, cotton) and sugarcane. The year-wise production details of agriculture crops is given in the table below.

Table 30: Trends in agriculture production *(in lakh tons)*

Agriculture crops	1970-71	1980-81	1990-91	2000-01	2008-09
Cereals	52.35	57.14	57.05	100.03	99.71
Pulses	5.11	4.88	5.39	9.56	9.06
Garden / Plantation	652.34	893.75	1206.59	1772.58	1661.89
Sugarcane	81.06	121.27	207.50	429.23	221.26

From the trends in production of each of the crops, the CAGR has been calculated. The CAGR for cereals is 1.7%, for pulses is 1.5%, sugarcane is 2.7% and garden / plantation crops is 2.5%. Based on the CAGR for different crops, the estimated quantum of production for the period 2011 – 2041 is presented below.

Table 31: Estimated production of agriculture crops *(in lakh tons)*

Agriculture crops	2011	2021	2031	2041
Cereals	103.15	122.21	144.79	171.55
Pulses	9.34	10.86	12.62	14.67
Garden / Plantation	345.46	361.61	378.52	396.21
Sugarcane	1745.73	1833.80	1926.32	2023.50

Proposed projects

Government of Karnataka has proposed food parks in the following locations:

- Bagalkote
- Malur
- Jeewargi
- Maddur
- Belgaum
- Chitradurga
- Tumkur
- Shimoga
- Davangere
- Kolar
- Bijapur

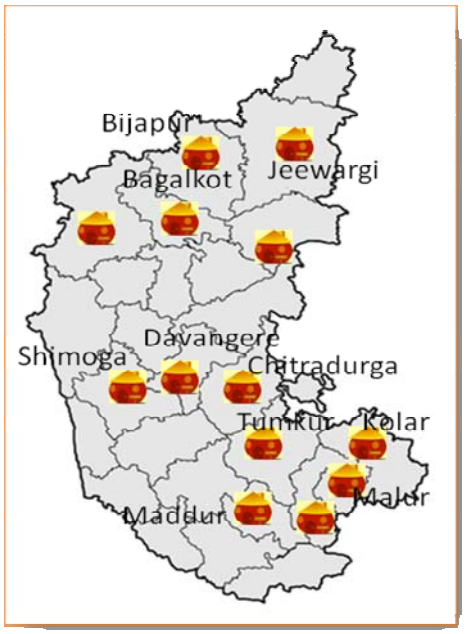


Figure 14: Proposed Food Parks in Karnataka

The bid process for selection of private developer for the food parks at Bijapur, Belgaum, Davangere, Tumkur, Shimoga is currently under way.

The principal horticulture crops grown in the state are fruits, vegetables, spices, flowers, medicinal and aromatic plants. The year-wise production details of horticulture crops is given in the table below.

Table 32: Trends in horticulture production *(in lakh tons)*

Agriculture crops	2003-04	2004-05	2005-06	2006-07
Fruits	38.30	40.79	43.45	47.36
Vegetables	41.52	44.03	67.00	70.15
Spices	4.19	5.96	6.12	6.04
Flowers	1.49	1.50	1.61	1.92
Total	**85.5**	**92.28**	**118.18**	**125.47**

From the trends in production of each of the crops, the CAGR has been calculated. The CAGR for fruits is 5.4%, for vegetables is 14%, spices is 9.6% and flowers is 6.6%. Based on the CAGR for different crops, the estimated quantum of production for the period 2011 – 2041 is presented below.

Table 33: Estimated production of horticulture crops *(in lakh tons)*

Agriculture crops	2011	2021	2031	2041
Fruits	58.55	99.52	169.17	287.54
Vegetables	118.53	439.91	1632.63	6059.19
Spices	8.70	21.69	54.06	134.73
Flowers	2.47	4.67	8.81	16.64
Total	**188.25**	**565.79**	**1864.67**	**6498.1**

Proposed Projects

Karnataka State Horticulture Development Agency (KSHDA) has identified around 19 sites across 9 districts for development through Private Sector Participation.

The districts identified are:

- Tumkur
- Mysore
- Dakshina Kannada
- Hassan
- Kodagu
- Udupi
- Chitradurga
- Bellary

4.1.1 Gaps in transport infrastructure

The agriculture / horticulture industry largely relies on roads for movement of the produce. The improvement of the state highways, major district roads and village roads in the state (as explained in Chapter 2) would benefit the industry.

The critical gaps as far as the logistics aspects are concerned are more in the storage / warehousing facilities and availability of cold storage chains across the state for handling the perishable produce. These aspects are discussed in detail in Volume II of this Study on Storage and Distribution logistics.

4.2 Cement

The production of cement in 2007-08 was 10.7 million tonnes and in 2008 – 09 was 11 million tonnes. The state government expects to add atleast 20 million tonnes of cement by the end of 2011. Besides, the government has approved 19 cement projects in the last three years.

The proposed cement projects in the state are:

- Chambal Fertilizers & Chemicals Ltd – Cement plant at Ferozabad in Gulbarga district (3.2 mtpa capacity and captive power plant of 50 MW)
- Dalmia Cement – at Yadwad, Belgaum (4 mtpa capacity and captive power plant of 40 MW)
- ACC Cement – expansion of Wadi cement unit, and new unit at Kuditini, Bellary (3mtpa capacity)

The other proposed projects in the state are:

- Sagar Cements, Gulbarga - 5.5 mtpa
- Zuari Chambal, Ferozabad, Gulbarga - 3 mtpa
- Shree Cement, Gulbarga - 2.3 mtpa
- Dalmia Cement, Gulbarga – 2 mtpa
- Chettinad, Gulbarga – 2.5 mtpa
- ACC, Udupi – 1 mtpa

There are some state level cement plants also proposed to be set up. The proposed cement industrial zones are at:

- Gulbarga
- Bagalkote
- Chitradurga
- Belgaum

It is expected that the existing and proposed cement plants in the state would result in a total production of 44 million tonnes of cement per annum.

4.2.1 Gaps in transport infrastructure

The production of cement in the state is estimated to increase nearly 4 times the current production in the next 5 to 10 years. Currently the exports of cement are not of a very high order as it is just sufficient to meet the domestic demand. With the increase in production, atleast 20 to 25 million tonnes of surplus quantity of cement would be available for exports. It is expected that the exports would largely be from NMPT. Thus the road and rail connectivity to the port and connectivity to the three railway divisions at Hubli, Bangalore and Mysore for domestic cement movement from Bagalkot and Gulbarga would need to be suitably enhanced.

4.3 Iron ore

The trends in iron ore production from different regions in the State have been analysed. The same is given in the table below.

Table 34: Tends in iron ore production *Million Tonnes*

District	2001-02	2002-03	2003-04	2004-05	2005-06	2006-07	2007 – 08	2008 - 09
Bellary	6.00	15.90	25.40	31.50	36.30	30.28	39.60	35.70
Bagalkot	0.06	0.03	0.33	0.80	1.20	1.54	1.54	1.93
Chikmagalur	5.60	5.70	5.20	4.50	2.90	0	0	0
Chitradurga	1.30	1.30	2.20	2.30	2.30	2.59	3.00	7.00
Tumkur	0.00	0.20	1.10	1.70	1.60	1.80	2.00	3.00
TOTAL	**12.96**	**23.13**	**34.23**	**40.80**	**44.30**	**36.21**	**46.14**	**47.63**

From the trends in production, the average CAGR for the state has been computed for the years 2004 – 2009. The average CAGR of 7% for the state has been assumed for estimating the iron ore production from the principal iron ore producing regions over the next 30 years. The growth in production has been capped at 2015, owing to infrastructural constraints. The projections for production of iron ore from the principal iron ore producing regions is given in the table below.

Table 35: Estimated production of iron ore *Million Tonnes*

Region	2010	2015	2020	2030	2040
Bellary - Hospet	38.09	52.69	52.69	52.69	52.69
Chitradurga - Tumkur	10.67	14.76	14.76	14.76	14.76
TOTAL	**48.76**	**67.45**	**67.45**	**67.45**	**67.45**

4.3.1 Gaps in transport infrastructure

The production of iron ore in the state is estimated to increase by almost 50% in the next 10 years. The road and rail links to the ports from Bellary – Hospet and Chitradurga – Tumkur regions are currently saturated and need to be augmented to handle an additional 20 million tonnes of iron ore traffic per annum.

4.4 Steel

The existing production of steel per annum is about 8.7 million tonnes. Various steel projects have been cleared by the state government. Some of these projects are NMDC, POSCO, Arcellor Mittal, etc. The estimated steel production from these new projects is approximately 40 million tonnes per annum.

The proposed steel plants that are likely to come up in the state are provided in the table below.

Table 36: Proposed steel plants in Karnataka

S.No	Mine owners	Capacity (mtpa)
1.	NMDC	5.00
2.	Mukund Steels	0.54
3.	Ravindra Trading & Agencies Ltd	6.00
4.	Kariganur Mineral Mining Industry (M/s Kariganur Iron & Steel Pvt Ltd JV with Ispat)	0.90
5.	Arcellor Mittal India Ltd	6.00
6.	Tata Metaliks	3.00
7.	ARTECH Steel Industries Pvt Ltd	1.20
8.	Essar Steel	6.00
9.	Surya Roshni Ltd	5.00
10.	Posco	6.00

The steel plants require coking coal as one of the main raw material for producing steel, which is projected to be met through imports. The likely consumption of iron ore by steel plants in 2015 would be approximately 14 mtpa.

4.4.1 Gaps in transport infrastructure

The production of steel is likely to increase nearly 300% over the next 10 to 15 years. Coking coal is the key raw material required for the manufacture of steel. Coking coal imports would be through NMPT. Capacities at the port and the connectivity of the port to the hinterland (primarily by rail) requires to be augmented to handle this capacity increase.

4.5 Automobiles

The two major automobile manufactures in the state are Toyota and Volvo. The Toyota factory is situated on the Bangalore – Mysore Highway and the Volvo factory is on the Old Madras Road. About 80,000 cars were produced by Toyota in FY 2009 and Volvo produced 1657 trucks in the same year.

Assuming a 7% CAGR, the likely production of cars and trucks in the next 20 years is estimated. The same is presented in the table below.

Table 37: Estimated production of automobiles

Automobile	2009	2015	2021	2031
Toyota (cars)	80000	150000	225110	280000
Volvo (trucks)	1657	2661	5234	10296

The state government has proposed auto clusters at Bidadi, Shimoga and Dharwad.

4.5.1 Gaps in transport infrastructure

The production of automobiles is likely to double in the next five years. The key auto players are located around Bangalore. To handle this additional capacity, the capacities at SWR Bangalore division, ICD (Whitefield), BIAL need to be suitably increased.

4.6 Textiles

The production trends of textiles / apparel in the state is unavailable. However, in terms of investments, Karnataka had invested about Rs. 2.7 billion in existing projects and projects under execution (as of June 2009), which is merely 4% of the total investments made by the southern states of Andhra Pradesh, Tamil Nadu and Kerela.

To give a boost to the textile industry in the state, the government has proposed the following apparel parks for development in the state:

- Eleven Textile Parks at Gulbarga, Davanagere, Bellary, Bangalore, Ramanagaram, Mysore and Belgaum among other districts.
- Karnataka Industrial Area Development Board (KIADB) proposes to establish a Textile Park in Davanagere at a cost of Rs 350 lakhs on 60 acres of land at Karur.
- An Integrated Textile Park at Doddaballapur
- Apparel Park Phase II and III at Doddaballapur
- High Tech Weaving Park at Mysore
- Textile clusters at Chitradurga, Shimoga / Gulbarga.

4.6.1 Gaps in transport infrastructure

Textilese / readmade garments are mainly exported out of BIAL. Capacities at BIAL to handle the increase in textile exports would be underaken by the two Concessionaires appointed for cargo operations at BIAL.

5. PROPOSED TRANSPORT PROJECTS FOR IMPROVEMENT

Based on the industry-wise demand, supply and gaps in each of the modes of transport viz., roads, rail, airports and ports, the key transport projects for improvement / enhancement have been identified. The projects along with the investment requirements are presented in this Chapter.

5.1 Roads

The key issues pertaining to roads and road related infrastructure in the state can be broadly classified into the following catogories:

- Capacity of roads
- Quality of road surfaces
- Intersections
- Parking facilities - Transport Hubs

Capacity of roads

The bulk cargo that is transported by road is mainly iron ore, coal, steel and cement. To improve the transportation logistics for these industries it is important to enhance the capacities of the roads connecting the hinterland with the ports and connectivity to the ICD at Whitefield.

The key roads providing port connectivity and linkages to the industrial corridors have been identified. The length of these roads and the approximate cost for improvement is presented in the table below.

Table 38: Key cargo carrying roads and cost for improvement

S No.	Details	Description	Length (km)	Cost (Rs. Crore)
I.	**ROADS**			
a.	NH 17	From Goa Border-Karwar-Ankola-Honavar-Bhatkal-Baindur-Kundapura-Udupi-Mangalore-Kerala Border	210	2520

S No.	Details	Description	Length (km)	Cost (Rs. Crore)
b.	NH 63	Ankola-Yellapur-Hubli-Gadag-Lakkundi-Bhanapur-Koppal-Munirabad-Torangallu-Kudatini-Bellary-Hagari-Karnataka/Andhra Pradesh border	362.6	4351.2
c.	NH 13	From Maharashtra Border-Horti-Bijapur-Hungund-Kushtagi-Hospet-Jagalur-Chitradurga-Holalkere-Bhadravati-Shimoga-Tirthahalli-Karkal-Mangalore	714.7	8576.4
d.	NH 7	From Andhra Pradesh Border-Chik Ballapur-Devannalli-Bangalore-Chandapura-Attibele-Tamil Nadu Border	134	1608
e.	NH 48	Bangalore-Nelamangala-Kunigal-Channarayapatna-Hassan-Alur-Sakleshpur-Uppinangadi-Mangalore	319.5	3834
f.	NH 206	Tumkur-Nittur-Kibbanahalli-Tiptur-Arsikere-Banavar-Birur-Bhadravati-Shimoga-Anandapuram-Sagar-Telguppar –Gersoppa-Honavar	356.4	4276.8
g.	SH 69	Highway connecting Kumta with Thadas via Sirsi and Mundagodu.	139	973
h.	SH 64	Highway connecting Kadur with Kannagad via Chickamagalur, Mudigere, Belthangadi, Bhantwal and Kalladka.	190	1330
i.	SH 68A	Highway connecting Tumkur with Honnavar in Badravathi and Shimoga Town Limits.	12	84
j.	SH 47	Highway connecting Mandya with Hadagali via Melukote, Shravanabelagula, Tiptur, Huliyar, Hosadurga, Holalkere, Anagodu and Harapanahalli.	354	2478
k.	SH 71	Highway connecting Tiptur with Hassan via Dudda (additional length of 8 Kms from Dairy Circle to Devarayapatna (NH-48 in Hassan town limits)	57	399
l.	SH 19	Highway connecting Srirangapatna with Jeevargi via Nagamangala, Hiriyur, Chellakere, Bellary, Siraguppa, Sindhanur, Lingasugur, Surpur and Sahapur (including Gulbarga City limits)	611	4277
m.	SH 63	Highway connecting Raravi with Belur via Siraguppa, Desanur, Gorebal, Karatagi, Kanakagiri, Yelaburga, Sankallur, Sudi and Rajur.	165	1155

S No.	Details	Description	Length (km)	Cost (Rs. Crore)
n.	SH 20	Highway connecting Raichur with Bachi via Lingasugur, Hungund, Bagalkote, Lokapur, Yeraghatti and Belgaum.	354	2478
o.	SH 95	Highway connecting Hoskote with Venkatagirikote via Malur, Tekal, Bangarpet and Budhigere	84	588
		TOTAL	**4063.2**	**38928.4**

It is observed that only parts of NH 17, NH 7 are 4-lane and 6-lane stretches. The remaining roads are all 2-lane (7 – 7.5 m) roads. The traffic mix on these roads consists of passenger traffic and cargo traffic competing for the same road space, which drastically reduces the average speed on the roads.

Since these identified roads are important freight carriers for the state, it is crucial for all these roads to be upgraded to address the increasing cargo requirements. The cost for improvement has been worked out on the premise that the 2 lane roads would need to be widened to 4 lane roads.

Quality of road surfaces

In addition to the road width constraints, the quality of road surfaces severely affects mobility on the roads. Due to heavy truck traffic on the roads, the road surfaces are often prone to damage. Potholes and wavy road features (resulting from faulty construction and maintenance) all contribute to poor road quality. Bad quality roads put extra stress on the engine, causing more fuel consumption and result in higher wear and tear of vehicles. In addition, engines produce higher emissions while accelerating, decelerating and climbing gradients.

To facilitate smooth travel on the roads, it is important that the roads are constructed well and periodic maintenance works are carried out to retain the quality of the roads.

Intersections

Long route vehicles, pass through many intersections in urban centers. Some of these intersections have multiple approaches, which drastically reduce the speed of vehicles and also contributes to a higher rate of accidents.

It is important to plan key intersections in each of the urban centres in the state, in such a way so as to minimise the number of approaches and conflicting points.

Parking facilities - Transport Hubs

The trucks carrying cargo normally travel long routes and through multiple cities in the state before they reach the final destination. There is a ban on the cargo carrying trucks from passing through the cities during the day time and are allowed to pass through the city only after seven in the evening or alternatively can travel on the bypass roads. It is a common sight on the highways to see the trucks lined up along the highway just before the entry point of the city limits, due to a lack of parking facilities. NH 63 at Hubli and Gadag, NH 4 at Tumkur / Nelamangaur, NH 48 at Hassan / Chiknayakanahalli are just some examples. These waiting trucks increase the congestion on the roads, reduces the travelling speed of other vehicles and also increases the occurance of accidents. Further, it is a severe inconvenience to the truck drivers who have no access to basic facilities like public conveniences, resting rooms, workshop services, etc.

Transport hubs are the key for addressing this issue. Given the growth in truck traffic and the increasing traffic congestion on roads within the city, transport hubs could be developed at the intersections of major arterial roads and ring roads at all important cities in the state. These transport hubs would provide the required parking facilities for the vehicles, necessary amenities to the drivers, such as rest rooms, dormitory, canteen, godowns etc. and allied services related to transport business such as repair shops, fuel station, offices for transporters etc. These transport hubs would help reduce the congestion on the roads and provide access to facilities for the truck drivers.

The concept of transport hubs, indicative locations and investments required for developing a transport hub are explained in Chapter 7.

5.2 Railways

Railway freight movement is losing ground to roads, though the transportation costs by rail are much lower. This is especially true of freight commodities like cement, iron ore, POL, etc which is faster to move by road and facilitates end-to-end delivery. The main reasons for using roads over rail are:

- Non-availaibility of rakes for bulk transport (Hassan – Mangalore Railway line, Hubli – Londa-Vasco line for transporting iron ore)

- Inadequate stocking yards / warehousing facilities at key freight handling divisions of the railways (Bangalore, Mysore, Hubli, Belgaum)
- Capacity constraints on key freight lines
- Lack of inter modal transport integration facilities at key railway junctions

Rail traffic normally originates at three points, namely, Industry / collection centers (ICDs, CFSs, etc), mines and ports. The destinations would be industry, ports and distribution centers. Hence, connectivity between these origin destination points in the state must be strengthened. In this context, new lines are required to be developed on priority between Kuduchi – Bagalkot, Londa – Goa (dobuling), Bijapur – Shahabad, Shimoga - Harihara, Alamatti - Koppal and Hubli – Ankola. The electrification of the Guntakal – Gooty – Bangalore line is also critical.

Table 39: Key railway projects for improvement

S No.	Railway line	Length (km)	Investment required (Rs. Crores)	Benefits
1.	Hubli - Ankola	167	1000.0	Port connectivity for iron ore movement from Bellary – Hospet region
2.	Bijapur - Shahabad	140	840.0	Cement Industrial Zones
3.	Kuduchi - Bagalkot	142	816.0	Cement Industrial Zones and port connectivity
4.	Londa – Goa (doubling)	109	436.4	Connectivity to port for iron ore, cement, steel and power projects
5.	Shimoga - Harihara	84	504.0	Port connectivity to industrial regions
6.	Gadag – Haveri	84	350.0	Port connectivity to industrial regions
7.	Alamatti - Koppal	150	600.0	Port connectivity to east coast for cement and iron ore industries
Total		**876**	**4546.4**	

Dedicated freight corridors along key industrial nodes like Bangalore and Chennai, Hubli – Belgaum – Mumbai, Hassan – Mangalore and Hubli – Hassan – Mangalore would provide the key connectivity to ports from the hinterland.

5.3 Airports

Air cargo imports and exports of the state are currently handled only at the Bangalore International Airport (BIAL). The quantum of cargo handled at BIAL is likely to triple in the next 20 years. The cargo projections at BIAL (assuming a 5% CAGR) are presented in the table below.

Table 40: Cargo projections for BIAL

FY	2009	2015	2021	2031
Cargo in tons	95128.5	127481	207654	338246

The key demand would be generated from textiles, floriculture and electronic / manufacturing goods. Since the airport is functioning on a PPP mode, it is expected that the selected Concessionaires for handling the cargo operations would enhance the cargo facilities to meet the demand requirements.

The international airport at Mangalore is currently not handling any international cargo and most of the spices and coffee produced in the region is being brought all the way to BIAL for exports. This not only increases the cost of logistics, but also puts a heavy burden on the road traffic. Thus the international cargo operations at Mangalore airport is an immediate requirement.

The inland cargo handling facilities of domestic airports at Hubli, Mysore and Belgaum is limited. In keeping with the policy of the Government to connect key urban centres in the state with air services, the airports in tier II and tier III cities need to be developed. Adequate cargo handling facilities would need to be provided at all domestic and international airports to facilitate efficient air cargo operations.

The development of cargo handling facilities at all airports in the state would contribute to faster movement of cargo and reduce the burden on other modes of transport such as roads and rail.

The cost for development of the regional airports (both on PPP and non PPP basis) is estimated to be Rs. 1607.64 crore.

5.4 Ports

The ports at Mangalore, Karwar and Belekeri handle all the cargo traffic of ports in the state. The current capacity of the ports is 45 mtpa. In the next ten years, owing to the development

of new steel plants and other industries in the state the capacity requirement estimated is about 115 mtpa. Two key issues in transportation with respect to the existing ports are:

- Poor connectivity to hinterland
- Inadequate infrastructure facilities at the port

Poor connectivity to hinterland

Though NMPT is the only major port in the state, the connectivity to the port from the hinterland is restricted. Two rail lines provide connectivity to the port. Hassan – Mangalore Rail line provides the last mile connectivity to NMPT from the hinterland of the state, but suffers from operational efficiencies. Moreover the feeder rail networks from different parts of the state to Hassan are not well developed. The Konkan Rail line runs parallel to the coast and provides connectivity to NMPT from the Mumbai region and from other ports at Karwar and Belekeri, but not much of cargo is reaching the port on this link.

The connectivity by road is also severely constrained owing to the western ghats in the region. NH 48, the primary road line for freight movement to the port suffers from quality and capacity constraints. The road is often shut down for truck movement, forcing truckers to use alternative roads, which are unfortunately not designed to handle the volume of truck movement. This further leads to deterioration in road quality, reduction in travel speeds and increases the chances for accidents.

Due to these connectivity issues, traders are forced to choose alternative ports at Chennai, Krishnapatnam and Ennore for exports. For sustainaibility of the port in the long run, the road and rail linkages to the port need to be improved.

The ports and Tadri and Honnavar are proposed for development by GoK. The critical factor for successful operations of these ports would again depend largely on the road and rail connectivity to the hinterland. In this context the Hubli – Ankola and Honnavar – Talaguppa rail lines become important for faciliation of cargo movement.

Inadequate infrastructure facilities at the port

The infrastructure facilities at the ports need to be augmented for handling increased cargo traffic. While there are proposals to set up additional berths at NMPT and Karwar for handling the iron ore traffic of the state, the supporting infrastructure at the port also needs to be sufficiently improved. The infrastructure at the port in terms of the handling equipment, stock

yards / warehousing facilities, rail sidings, etc, needs to be augmented, to be able to handle additional cargo.

To facilitate entry of capesize and larger size vessels the draft available at NMPT would need to be increased from the existing 11 m. Capesize vessels are being increasingly preferred by importing countries and traders due to lower freight costs. Competing ports at Chennai and Krishnapatnam have the required draft to handle larger vessels. For NMPT to retain its competitive edge would need to make available the required draft.

The cost for development / expansion of NMPT as provided in their Business Plan is estimated at Rs.6939.7 crore. The cost for development of the greenfield port at Tadadi (Phase 1) is estimated at Rs.3000 crore.

6. INDUSTRIAL CORRIDORS & CONNECTIVITY

The emerging and proposed industrial centers in the state and their connectivity linkages are assessed and presented in this Chapter. The emerging trend in the development of corridor across the state is illustrated in the map below. The map also shows that the urban settlements are concentrated in the southern district (Bengaluru, Kolar, and Mysore) and the north-western part (Belgaum, Dharwad, Bijapur and Gulbarga).

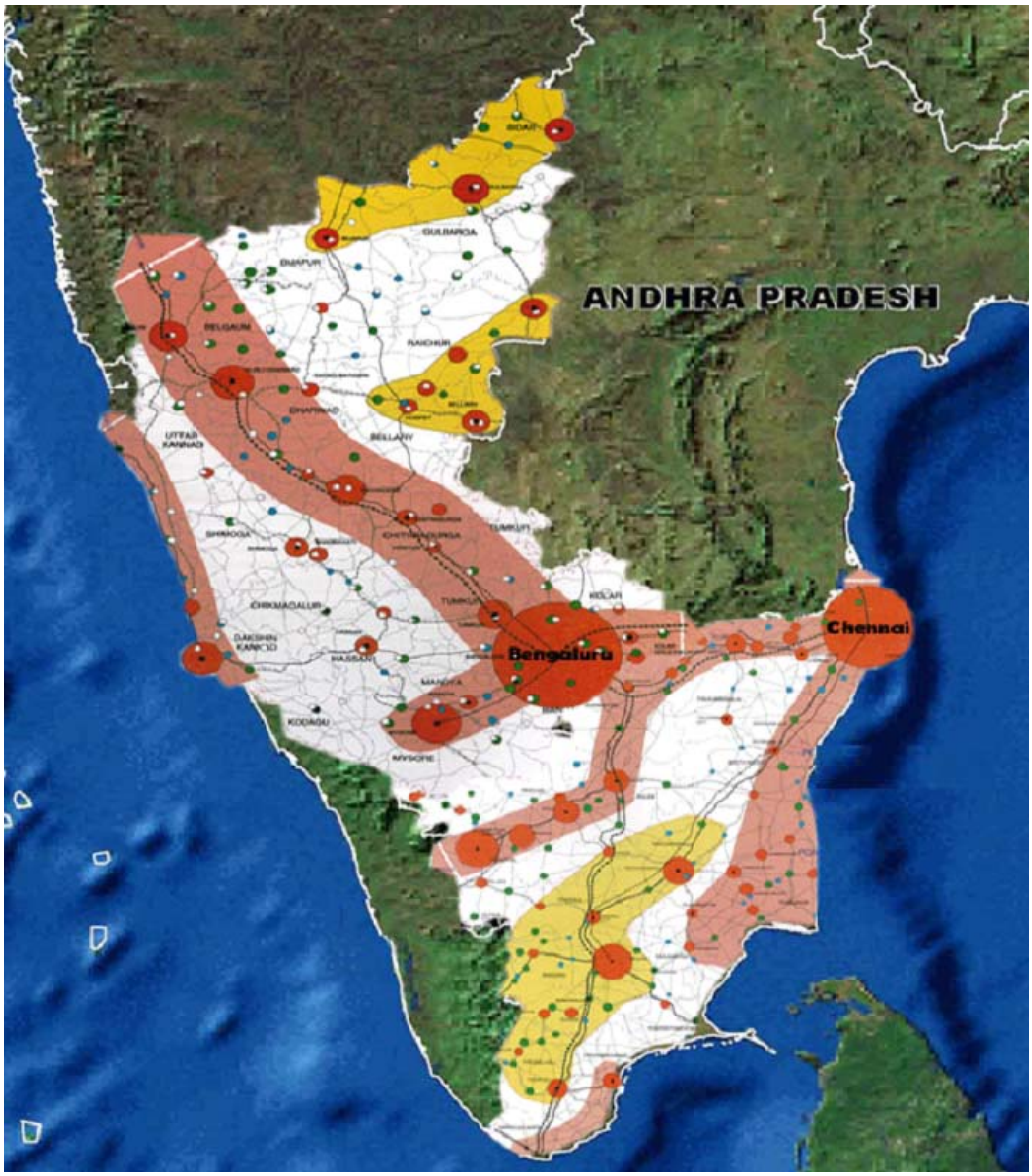


Figure 15: Emerging industrial corridors in the state

6.1 Emerging industrial corridors

The process of urbanisation has exerted a greater impact on the development of urban settlements along the National Highways, such as Bengaluru-Belgaum. The emergence of development corridor is predominant along the National Highway specially Bengaluru-Tumkur-Chitradurga. The industrial corridor is rapidly developing between Bangalore – Chitradurga – Belgaum. Bellary, Raichur, Gulbarga, Bijapur are the future growth regions.

The major industries in the state are classified below:

- IT cluster in Electronics City and Whitefield, Bangalore
- Biotech Park / cluster at Electronics City, Bangalore
- Automobile and Auto component cluster at Shimoga
- Agro based industries, Shimoga, Belgaum, Kolar
- Industrial valve cluster at Hubli-Dharwad
- Engineering / Machine tool cluster at Peenya Industrial Estate, Bangalore
- Steel Industry
- Textile cluster at Doddaballapur
- Cement industries in Gulbarga
- Coffee Production and processing cluster at Madekeri
- Coir clusters at Hassan
- Foundry cluster at Belgaum
- Handicrafts cluster at Channapatna

Based on the location of the major industries in the state, the key industrial clusters in the state are in the following regions:

- Bangalore
- Hubli
- Belgaum
- Bellary / Hospet
- Tumkur
- Mysore
- Mangalore

The map alongside depicts the industrial clusters in the state and the connectivity linkages to the key transshipment centers at Bangalore, Mangalore, Karwar and Belekeri.

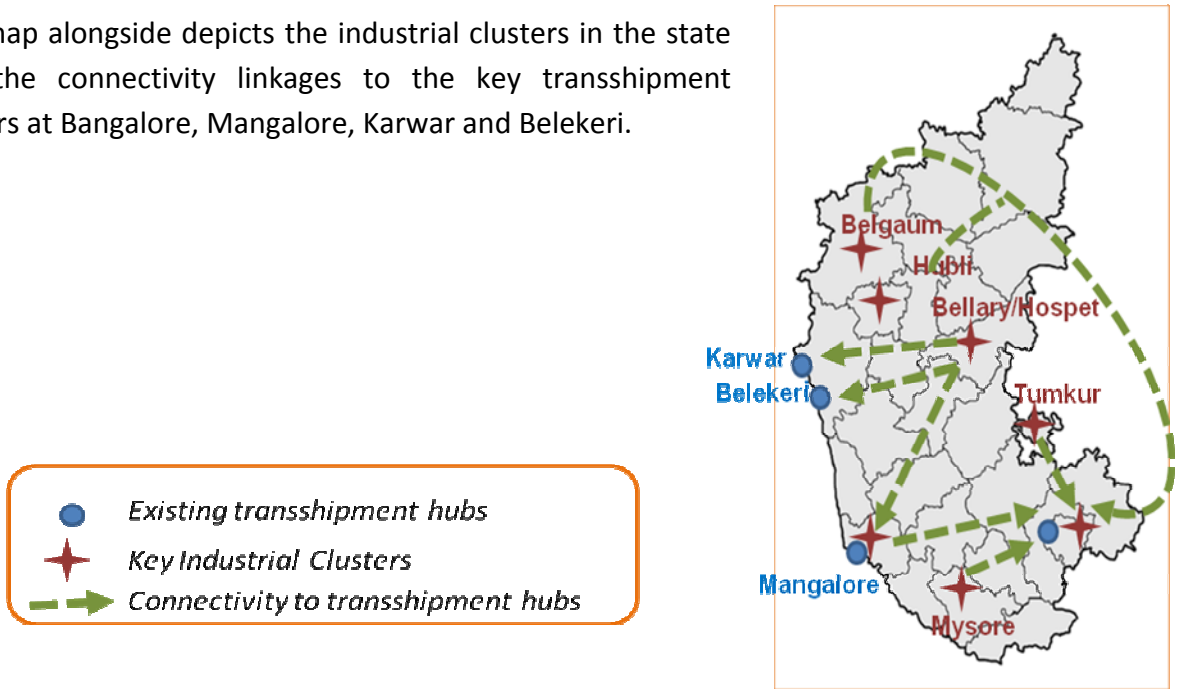


Figure 16: Key industrial centers and connectivity to transshipment centers

6.1.1 Key transport connectivity by road

The key roads in the state connecting the industrial centers are NH 4, NH 13, NH 63, NH 17 and NH 48. Given below is a map depicting the road connectivity between industrial corridors and the transshipment centers.

Figure 17: Map showing road connectivity between industrial corridors and transshipment centers

6.1.2 Key transport connectivity by rail

Bangalore, Mysore and Hubli divisions of South Western Railway, Hassan Mangalore Rail line and Konkan Rail line form the key rail connectivity for carrying cargo.

The map below depicts the rail connectivity between the emerging industrial corridors and the transshipment centers in the state.

Figure 18: Map showing rail connectivity between industrial corridors and transshipment centers

6.2 Proposed industrial zones

The Ministry of Commerce, Government of India has proposed Industrial Corridors covering potential areas across the country. The Government will implement Suvarna Karnataka Development Corridor (SKDC) programme throughout the length and breadth of the State. This Corridor envisages development of large industrial nodes and industrial areas along national highways and laterals, as well as rail lines. An extent of 25 km on both sides of the corridor will be developed through orderly establishing industrial clusters, townships, satellite towns and sector specific industrial zones

The overall objective of such Industrial Corridors is to accelerate development of industrial growth through infrastructure support and enable contribution to the economy from potential areas along the corridor.

Such a corridor will possibly benefit many potential areas in the Karnataka Region from Bangalore to Belgaum and laterals of about 50 to 1500 km. from the national highway and rail network, both of which can form the necessary freight corridor for trade industry. Conceptually identification of investment regions backed by core infrastructure would be the key for development along the Industrial Corridor

Core infrastructure such as energy, road & rail linkages, inland container depots, free trade zones and urban infrastructure are the major key segments to take advantage of this Corridor to make a significant impact on Karnataka's economic growth. The corridor proposes to cover 11 District headquarters and more than 20 major towns along the highways/major roads and rail links. As a part of this Programme, the major industrial corridors/zones/nodes are proposed along the following

The proposed special industrial zones in the state along the corridor are as follows:

- Bidar-Gulbarga-Bellary-Hiriyur
- Tumkur- Honnavar via Shimoga
- Chitradurga-Mangalore via Shimoga-Udupi
- Chitradurga-Hospet-Koppal-Raichur
- Chitradurga-Hospet-Bagalkot-Bijapur

The region-wise industries proposed in the state are provided in the table below:

i)	Steel	Covering , Koppal, Bagalkot, Haveri, Gadag & Raichur, Bellary Districts
ii)	Cement	Covering , Bagalkot, Chitradurga, Gulbarga, Belgaum Districts
iii)	Food Processing	Covering Bangalore Rural, Kolar, Shimoga, Bagalkot, Bijapur, Davangere Districts.
iv)	IT/ BT	Covering Mangalore, Gulbarga, Mysore, Belgaum, Hubli-Dharwad, Shimoga Districts
v)	Automobile	Covering Ramanagara, Shimoga, Dharwad Districts.
vi)	Readymade Garments	Covering Bangalore Rural, Tumkur, Kolar, Mandya, Bidar, Dharwad, Belgaum and other Districts.
vii)	Sugar and co-gen power	Covering Bidar, Bagalkot, Shimoga and Mandya Districts.
viii)	Pharmaceutical/Bio-Technology	Covering Bangalore, Mysore and Hassan Districts
ix)	Power Generation	Covering Raichur, Bellary, Bijapur & Chitradurga Districts.
x)	Media & Entertainment	Bangalore (R) and Ramanagara

Road connectivity is also proposed to be developed between these special industrial zones under the Suvarna Karnataka Development corridors programme.

6.3 Conclusion

The industrial corridors identified for development in the future, would witness rapid urbanization. Since these corridors would also attract most of the freight movement in the state, it is all the more important to provide the required connectivity linkages in terms of road, rail, airports and ports. In addition, transport hubs would need to be provided at suitable locations to decongest traffic movement on roads and provide better facilities for the drivers of long haul vehicles.

7. TRANSPORT HUB

Chapter 5 and the previous Chapter highlighted the need for transport hubs at all major entry / exit points of important cities in the state. The concept of a transport hub and the investments required for setting up a transport hub is presented in this Chapter.

7.1 Concept

Majority of the interstate trips made by trucks are between Bangalore and other states (carrying mainly industrial finished products and agricultural products) and the intrastate trips are generally from Bangalore to the main towns of Karnataka. Majority of the vehicles carry 20-30 tonnes and make more than 2 trips in each month. A transport hub is envisaged to provide organized and most modern truck parking facilities with all necessary basic amenities for truck drivers and other users on the highways. These hubs are proposed to be located at entry / exit points of key urban destinations in the state.

Facilities to be provided

The facilities to be provided in the transport hub would include:

- Modern truck parking facilities
- Storage facilities
- Dormitories / resting rooms
- Commercial shops
- Fuel stations
- Repairs / workshop facilities

Indicative locations for transport hubs

The indicative locations for development of transport hubs in the state are provided in the table below:

Table 41: Indicative locations for transport hubs in the state

City	Location	Road
Bangalore	Hoskote	NH 4
	Nelamangala	Intersection of NH 4 & NH 48
	Bidadi / Ramanagaram –	SH 17

City	Location	Road
Mysore	Srirangapatna	SH 17
	Nanjangud	NH 212
Hassan	Channarayapatna	NH 48
Mangalore	Bantwal	NH 48
	Mulki	NH 17
Shimoga	Bhadravathi	NH 206
Hubli	Kalghatgi	NH 63
	Navalgund	NH 13
	Tadas	NH 4
	Between Gadag & Hubli	NH 63
Belgaum	Halaga, Kakati	NH 4
Chitradurga	Kyadigere, Seebara	NH 4

These locations would however, need to be finalized after undertaking detailed traffic and market demand assessment studies. A PPP framework could be looked at for developing these transport hubs. As a pre-requisite, the financial viability would need to be assessed for each location. The viability would depend on various factors such as land, location, demand for the facility, traffic, willingness to pay by users, etc.

7.2 Costing

Assuming a land parcel of 22 acres and parking spaces for upto 360 trucks, the estimated construction cost of the transport hub for both bituminous and concrete pavements including IDC and preoperative expenses would be approximately Rs. 17 crores and 20 crores respectively. Construction time is assumed to be approximately 12 months.

The primary source of revenue for the facility would be the parking fee for the trucks. The fee would vary depending on the type of truck and the number of hours for which the facility is being utilized.

The total cost for development of about 20 transport hubs in the state at the identified locations is estimated at Rs. 300 crore.

Depending on the land available and the size of the facility to be developed, a detailed financial analysis would need to be undertaken to assess the construction and O&M costs and estimate the likely revenues from the facility.

8. SUMMARY OF TRANSPORT INVESTMENT PROJECTS

The key transort projects for improving connectivity and providing the necesssary linkages for overall improvement of the logistics scenario in the state, have been identified and presented in Chapter 5. Based on the emerging and proposed industrial corridors of the state, suitable locations for setting up transport hubs have been identified and presented in Chapter 7. This Chapter presents a summary of the required investments in various transport projects.

Table 42: Summary of transport investment projects

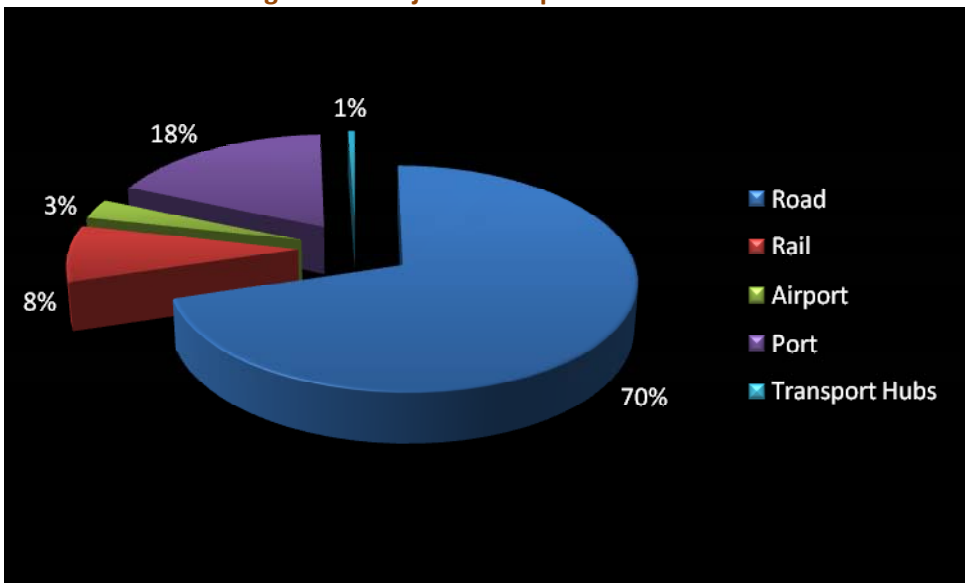
S No.	Details	Description	Length (km)	Cost (Rs. Crore)
I. ROADS				
a.	NH 17	From Goa Border-Karwar-Ankola-Honavar-Bhatkal-Baindur-Kundapura-Udupi-Mangalore-Kerala Border	210	2520
b.	NH 63	Ankola-Yellapur-Hubli-Gadag-Lakkundi-Bhanapur-Koppal-Munirabad-Torangallu-Kudatini-Bellary-Hagari-Karnataka/Andhra Pradesh border	362.6	4351.2
c.	NH 13	From Maharashtra Border-Horti-Bijapur-Hungund-Kushtagi-Hospet-Jagalur-Chitradurga-Holalkere-Bhadravati-Shimoga-Tirthahalli-Karkal-Mangalore	714.7	8576.4
d.	NH 7	From Andhra Pradesh Border-Chik Ballapur-Devannalli-Bangalore-Chandapura-Attibele-Tamil Nadu Border	134	1608.0
e.	NH 48	Bangalore-Nelamangala-Kunigal-Channarayapatna-Hassan-Alur-Sakleshpur-Uppinangadi-Mangalore	319.5	3834.0
f.	NH 206	Tumkur-Nittur-Kibbanahalli-Tiptur-Arsikere-Banavar-Birur-Bhadravati-Shimoga-Anandapuram-Sagar-Telguppar –Gersoppa-Honavar	356.4	4276.8
g.	SH 69	Highway connecting Kumta with Thadas via Sirsi and Mundagodu.	139	973.0
h.	SH 64	Highway connecting Kadur with Kannagad via Chickamagalur, Mudigere, Belthangadi, Bhantwal and Kalladka.	190	1330.0
i.	SH 68A	Highway connecting Tumkur with Honnavar in Badravathi and Shimoga Town Limits.	12	84.0

S No.	Details	Description	Length (km)	Cost (Rs. Crore)
j.	SH 47	Highway connecting Mandya with Hadagali via Melukote, Shravanabelagula, Tiptur, Huliyar, Hosadurga, Holalkere, Anagodu and Harapanahalli.	354	2478.0
k.	SH 71	Highway connecting Tiptur with Hassan via Dudda (additional length of 8 Kms from Dairy Circle to Devarayapatna (NH-48 in Hassan town limits)	57	399.0
l.	SH 19	Highway connecting Srirangapatna with Jeevargi via Nagamangala, Hiriyur, Chellakere, Bellary, Siraguppa, Sindhanur, Lingasugur, Surpur and Sahapur (including Gulbarga City limits)	611	4277.0
m.	SH 63	Highway connecting Raravi with Belur via Siraguppa, Desanur, Gorebal, Karatagi, Kanakagiri, Yelaburga, Sankallur, Sudi and Rajur.	165	1155.0
n.	SH 20	Highway connecting Raichur with Bachi via Lingasugur, Hungund, Bagalkote, Lokapur, Yeraghatti and Belgaum.	354	2478.0
o.	SH 95	Highway connecting Hoskote with Venkatagirikote via Malur, Tekal, Bangarpet and Budhigere	84	588.0
		Total of Roads	**4063.2**	**38928.4**
II.	**RAILWAYS**			
a.	Hubli - Ankola		167	1000.0
b.	Bijapur - Shahabad		140	840.0
c.	Kuduchi - Bagalkot		142	816.0
d.	Londa – Goa (doubling)		109	436.4
e.	Shimoga - Harihara		84	504.0
f.	Gadag – Haveri		84	350.0
g.	Alamatti - Koppal		150	600.0
		Total of Railways	**876**	**4546.4**
III.	**AIRPORTS**			
	PPP Projects			
a.	Shimoga			111.0
b.	Gulbarga			111.0
c.	Bijapur			565.8
d.	Bellary			114.04
e.	Hassan (1st Phase)			600.0
	Non-PPP Projects			
f.	Mysore (expansion)			41.8

S No.	Details	Description	Length (km)	Cost (Rs. Crore)
g.	Bidar			32.0
h.	Karwar			32.0
			Total of Airports	**1607.64**
IV. PORTS				
a.	Development / Expansion of NMPT			6939.7
b.	Development of Greenfield port at Tadadi (Phase 1)			3000.0
			Total of Ports	**9939.7**
V. TRANSPORT HUBS				
At 15 identified locations in the state				**300.0**
GRAND TOTAL OF INVESTMENTS REQUIRED				**55322.1**

The project wise split of investments is presented in the graph below

Figure 19: Project-wise split of investments



9. REVIEW OF STATE POLICIES

The state government has set itself an ambitious target of increasing the share of industry to the state GDP to 20% by the year 2014 and to double the state's export from the current level of Rs.1,30,000 crores. In the previous chapters, the various development programmes of the state to improve infrastructure and boost industry and trade sectors were discussed. This Chapter highlights the salient features of the industry, infrastructure and trade policies of the state that are guiding the development process.

9.1 Industrial policy 2006 – 2011

The induststrial policy envisions to make Karnataka prosperous through development of human and natural resources in a systematic, scientific and sustainable manner. The state's vision, stragey and the focus sectors for development are summarized below.

The vision

- To achieve industrial growth of over 12%
- To accelerate the growth of industries
- To increse exports from the state
- To create employment for 10 lakh persons during the policy period
- To reduce regional imbalances

The strategy

- Encouraging mega. Large and medium industries and small scale industries through various incentives and concessions
- Developing infrastructure facilities ahead of requirement
- Encouraging industrial corridors and clusters
- Assisting human resource development
- Promoting agro food processing industries in potential locations to help farmers realize better prices for their produce
- Rationalization and simplification of labour laws

Focus sectors for investment

- Engineering
- Automobile & Auto components
- Aerospace
- Aircraft maintenance, repair and overhaul

- Information Technology
- Biotechnology
- Pharmaceuticals
- Apparels & Textiles
- Food processing
- Steel and mettallurgical industry
- Cement
- Contract research and R&D
- Oil refining and petrochemecals
- Infrastructure – Port Development

9.2 Infrastructure policy of Karnataka – 2007

The main objective of the Policy is to provide a fair and transparent policy framework to help facilitate and encourage public-private partnership (PPP) in upgrading, expanding and developing infrastructure in the state.

The new Infrastructure Policy covers the following sectors:

- Agri-infrastructure
- Education
- Energy
- Healthcare
- Industrial Infrastructure
- Irrigation
- Public Markets
- Tourism
- Transportation & Logistics
- Urban and Municipal Infrastructure

The touchstone principles of the Policy are:

- Efficient use of existing assets and optimal allocation of additional resoruces
- Payment for servcies
- Equitable contractual structures
- Transparent process of procurement
- Fair regulatory framework

- Enabling institutional framework
- Sustainable incentives and concessions

PPP would be considered both in new infrastructure projects and in managing existing infrasturcture projects. As fasr as possible, for all new investments in infrastructure, the option of implementing the project through PPPs would be considered first. GoK would directly invest in a project only after satisfying itself that the same cannot be implemented through a PPP. The following modesl would be considered for PPPs:

- Project implementation by GoK / GoK agency followed by a medium or long – tenure O&M contract to a private operator.
- Project implementation by a Special Purpose Vehicle (SPV) set up by GoK / GoK agency followed by divestitute to a private operator after stabilization of operations.
- Project implementation by a private developer / operator or joint entures with GoK under a licence / concession structure.

The policy also recognizes that for some projects it may be necessary for Government of India or GoK to extend financial support by way of equity participation, Viability Gap Fund, or other mechanisms in order to leverage the desired levels of private finance.

9.3 Karnataka EXIM (Export – Import) Promotion Policy 2007

The Policy provides an an effective, proactive and supportive Institutional mechanism for the rapid growth of exports in the state. It also seeks to build effective and competitive Export Infrastructure in the state.

In achieving this Mission, the focus will be on the objectives set out below:-

a) To focus on existing exporting industries, and to provide them with necessary support to give further boost to exports from these industries.

b) To motivate Industries in Karnataka exporting through Merchant Exporters in other States to export directly.

c) To encourage Industries / traders with products having good export potential to enter the export field.

d) To provide a conducive environment for motivating new export oriented units to set-up their base in Karnataka.

e) To bring about technology and skill upgradation in the traditional export sectors like Coffee, Silk, Textiles, Granites, Agarbathies and Handicrafts to enhance value addition and quality competitiveness.

f) To enhance the export potential of non-traditional sectors like Electronics & Software,

In order to achieve these objectives, the following strategy will be adopted.

a) To create a strong networking with Export Promotion Councils, FIEO, ITPO, NCTI and Product Sectoral Associations to give impetus to Public - Private partnership

b) To provide E-Governance support to exporters in Karnataka.

c) To establish a B2B exchange, which would facilitate even the small and tiny uni in the State to take up online trading activity

d) To create a strong analytical database on exports and exporters in Karnataka

e) To promote Public-Private initiative in developing competitive expor infrastructure

f) To setup an institutional mechanism in the State for promoting exports like State Level Export Promotion Council, State Level Export Promotion Committee and District Level Export Promotion Committee

g) To strengthen and restructure VITC as the Export Promotion Board of Karnataka which shall be the Nodal Agency to plan and execute strategies to sustain Karnataka as a global hub for international trade.

h) To focus on catalysing competitive advantages that Karnataka has in the Globa market by increasing its exports in Information Technology, Bio Technology Food Processing, Electronics & Communications, Garments, Machine Tools and Precision Engineering Goods, besides the traditional exports.

i) To identify sector specific support measures required for acceleration of exports in sectors in which the State has competitive advantages and to encourage them in consultation with the concerned sectoral association.

The following are the identified thrust sectors in the policy:

- Agriculture & processed food products
- Readymade garments
- Electronics
- IT & BT
- Engineering Goods
- Arts & Crafts
- Minerals & mineral based products

The policy states that creating good infrastructural facilities in potential export centres will receive utmost priority. Government will encourage participation of private sector in developing export infrastructure with a time bound implementation plan on suitable models like BOT, BOOT, BOST etc., In particular the following infrastructure projects will receive attention:

- Ports / ICD / CFS
- Special Economic Zones
- Agri Export Zones and Food Parks
- Apparel Export Parks
- IT enables services clusters
- Permanent exhibition / trade centre
- Assistance for developing Export infrastructure and other allied activities (ASIDE)

Annexure 1

Export performance of Karnataka

(Rs. Crore)

Commodity	2007-08	2008-09 (Provision)
Electronic and computer software	79517	78153
Readymade garments	4125	5395
Petroleum and products	11232	11642
Engineering	8301	6185
Iron ore and minerals	10197	7274
Silk products	912	896
Coffee products	1307	1579
Basic chemicals, pharmaceuticals,	2069	2530
Agriculture and process food	415	712
Gem and jewellery	9749	10892
Cashew and kernals	527	632
Handicrafts	428	428
Leather products	201	213
Chemical and allied products	399	456
Marine products	153	236
Plastic goods	215	265
Spices	245	479
Wool and woolen products	147	153
Miscellaneous and others	2559	2120
Total	132703	130255
Country's export	817872	
State's share	16.23%	

Source: VITC

Annexure 2

List of National Highways in Karnataka

S.No.	NH No.	Route	Length (km.)
1	4	From Maharashtra border - Sankeshwar - Belgaum - Dharwad- Hubli- Haveri - Ranebennur- Davangere - Chitradurga - Sira - Tumkur - Nelamangala - Bangalore - Hoskote - Kolar - Mulbagal- Andhra Pradesh border	658
2	4A	Belgaum - Khanapur - Gunji- Goa border	82
3	7	From Andhra Pradesh border - Chikballapur - Devanahalli- Bangalore- Electronics City - Chandapura - Attibele - Tamil Nadu border	125
4	9	From Maharashtra border - Rajeshvar - Homnabad - Mangalgi - Andhra Pradesh border.	75
5	13	From Maharashtra border - Horti - Bijapur - Hungund- Kushtagi - Hospet - Jagalur- Chitradurga - Holalkere - Bhadravati - Shimoga - Tirthahalli - Karkal- Mangalore	648
6	17	From Goa border - Karwar- Ankola - Kumta - Honavar - Bhatkal - Kundapura - Udupi - Surathkal-Mangalore - Talapady - Kerala border.	280
7	48	Bangalore- Nelamangala - Kunigal - Channarayapatna- Hassan- Alur - Sakleshpur- Uppinangadi- Mangalore	328
8	63	Ankola - Yellapur - Kalghatgi - Hubli - Gadag - Koppal- Hospet - Bellary up to Andhra Pradesh border	370
9	67	Gundlupet - Bandipur up to Tamil Nadu border	50
10	206	Tumkur- Tiptur - Arsikere - Kadur- Bhadravati- Shimoga - Sagar- Honavar and terminating at its junction with NH No.17 in Honavar.	363
11	207	Hosur Tamilnadu- Sarjapur - Devanahalli - Doddaballapur - Nelamangala	135
12	209	From Tamil Nadu border - Chamrajnagar - Kollegal - Malavalli - Kanakapura -	170

S.No.	NH No.	Route	Length (km.)
		Bangalore	
13	212	From Kerala border - Maddur - Gundlupet- Begur- Mysore - T Narsipur - Kollegal	160
14	218	Hubli - Nargund - Kerur- Bijapur - Sindgi - Jevargi - Gulbarga and terminating at its junction with NH No.9 near Homnabad	399

Source: Wikipedia

District-wise road lengths in Karnataka

Sl.No	Name Of The District	Road Length (in Kms)				Tota Road Length (km)
		NH	SH	MDR	VR	
1	Bangalore (Urban)	143.00	170.25	456.25	2356.53	3126.03
2	Bangalore (Rural)	203.00	190.90	626.05	2469.81	3489.76
3	Ramanagara	73.00	311.63	1618.120	2555.30	4558.13
4	Tumkur	72.00	364.46	1086.08	3219.50	4742.04
5	Kolar	57.00	363.70	967.70	3308.01	4696.41
6	Chickballapur	196.00	753.75	3760.93	9027.38	13738.06
7	Mysore	79.00	718.48	2502.51	4715.75	8015.74
8	Chamarajanagar	187.00	339.26	913.02	2672.99	4112.27
9	Mandya	73.00	466.86	2918.49	7732.45	11190.80
10	Shimoga	224.00	856.43	1524.74	6500.77	9105.94
11	Chitradurga	170.00	572.47	1632.00	6717.08	9091.55
12	Davangere	85.00	631.03	1172.31	3353.15	5241.49
13	Hassan	167.00	1056.3	3132.13	4863.45	9218.88
14	Chikamagalur	124.00	586.86	1775.02	5976.7	8462.58
15	Dakshina Kannada	177.00	596.25	773.79	7310.74	8857.78
16	Udupi	142.00	353.71	795.18	7705.63	8996.52
17	Kodagu	0.00	537.82	852.7	4134.63	5525.15
	South Zone	**2172.00**	**8870.16**	**26507.10**	**84619.87**	**122169.13**
18	Dharwar	189.00	476.9	868.46	3484.2	5018.56
19	Gadag	73.00	709.52	557.93	3291.35	4631.80
20	Haveri	103.00	600.55	911.32	5514.00	7128.87
21	Uttara Kannada	329.00	1245.09	751.59	7767.60	10093.28

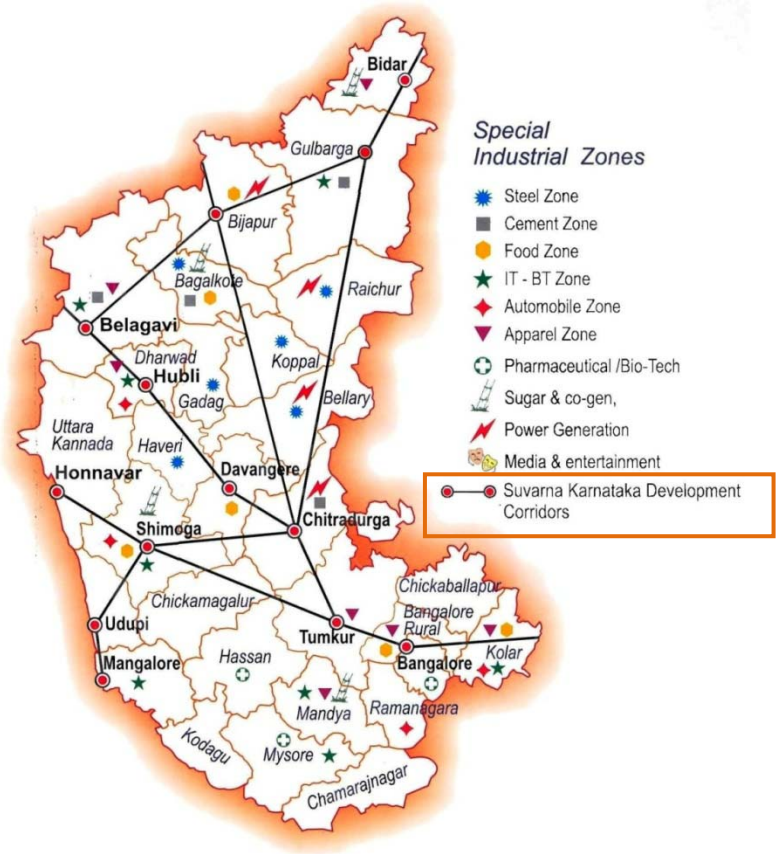
Sl.No	Name Of The	Road Length (in Kms)				Tota Road
22	Belgaum	201.00	2341.31	1186.73	7796.82	11525.86
23	Bagalkote	126.00	875.51	784.25	5018.30	6804.06
24	Bijapur	265.00	685.32	1379.64	6878.99	9208.95
25	Bellary	181.00	996.38	1033.04	4366.35	6576.77
26	Raichur	0.00	1006.51	662.3	3994.55	5663.36
27	Koppal	130.00	709.02	635.6	2612.20	4086.82
28	Gulbarga	122.00	1025.67	879.13	9402.15	11428.95
29	Bidar	82.00	1196.74	1786.48	2465.98	5531.20
	North Zone	**1801.00**	**11868.52**	**11436.47**	**62592.49**	**87698.48**
	South Zone Total	**2172.00**	**8870.16**	**26507.10**	**84619.87**	**121926.73**
	State Total	**3973.00**	**20738.68**	**37943.57**	**147212.36**	**209625.21**

Proposed Projects

The proposed projects in the road sector are highlighted below:

Development of Suvarna Karnataka Corridors on PPP along:

- Bidar-Bangalore via Chitradurga
- Tunkur-Honnavar via Shimoga
- Chitradurga-Mangalore via Shimoga-Udupi
- Bangalore-Belgaum via Davangere-Hubli



- GoK has identified 10,000 kms of State Highways and district main roads to be developed on PPP framework in a phased manner.

  Detailed Project Reports (DPRs) are being prepared for 1300 km of road & 300 km of village roads identified in Phase – 1

- The Government of Karnataka through the Government of India has applied for a loan from the International Bank for Reconstruction and Development (IBRD) of US$ 200 million towards the cost of the Karnataka State Highways Improvement Project II, and intends to apply part of the proceeds of this loan to payments for works, goods and services to be procured under the Karnataka State Highways Improvement Project. The Project is part of the State's ongoing core road improvement programme to support the growing economy and social development. The Project comprises of improvement of about 3,400 km of State Highways. The proposed improvements include upgrading existing sealed roads to standard 2-lane 7m paved (bituminous mix) carriageway and rehabilitation of existing sealed roads including widening and paving (bituminous mix). Median separated dual 2-lane carriageways with pedestrian sidewalks are also proposed in built-up areas as appropriate. The Project will be implemented in Stages.

- Construction of 147 Bridges (Phase- I)

  (i) Under Phase I KRDCL has taken up construction of 147 bridges on State Highways and Major District Roads of Karnataka. The physical work commenced in the month of October 2000 and all the 147 Bridges have been completed. The total cost of the Project is Rs. 110 crores.

  (ii) Bridge across Hemavathi River in Holenarasipura town.

- Apart from the above projects, the following table indicates the other projects in pipeline which are proposed to be taken up.

S.No.	Name of the Work	Length In Km	Estimated cost Rs. in Crores
1	Improvements to Dharwad-Ramanagar	50	170.00
2	Chikkanayakanahalli-Hassan road	76	225.00
3	Waghdhari- Ribbanpalli	140	220.00
4	Ring road to Hassan	50	262.00
5	Expressway to International Airport at Devanahalli	21.20	500.00 (Rs.1050 cr. Including tender cost)

Annexure 3

List of ongoing railway projects in Karnataka

No	Name	Length in Km	Total Project Cost (Rs. Crores)
South Western Railways			
1	**New Lines**		
a	Kottur - Harihar via Harpanhalli(Railways GoK) (50:50)	65	393
b	Kadur - Chickmagalur – Sakleshpur	93	215.3
c	Hassan - Bangalore via Shravanabelgola	166	578.9
d	Hubli – Ankola	167	504.8
e	Bangalore – Satyamangalam	260	486.0
f	Rayadurg - Tumkur via Kalyandurg	213	1240.9
g	Munirabad to Raichur	190	497.0
	Total New Lines	**1154**	**3916.0**
2	**Gauge Conversions**		
a	Bangalore - Hubli & Shimoga Town – Talguppa	630.0	1357.9
b	Arsikere - Hassan – Mangalore	236.0	797.2
c	Solapur (Hotgi) – Gadag	300.0	704.0
d	Mysore - Chamarajanagar (Phase-I) with extension to Mettupalayam	148.0	756.6
e	Kolar – Chickballapur	96.5	296.5
	Total Gauge Conversion	**1410.5**	**3912.2**
3	**Doubling**		
a	Whitefield – Bangarapet - Kuppam	81.2	306.3
b	Bangalore City - Kengeri - Patch doubling with electrification*	12.5	55.6
c	Kengeri – Ramanagaram*	32.4	188.4
d	Yeshwantpur – Tumkur	64.0	173.6
e	Bangalore - Whitefield - Bangalore City – Krishnarajapuram	23.1	108.2
f	Dharwad – Kambarganvi	26.7	123.4

No	Name	Length in Km	Total Project Cost (Rs. Crores)
g	Hubli – Hebsur	17.2	79.8
h	Arsikere - Birur - Patch doubling	44.3	180.3
i	Ramanagaram - Mysore with electrification of Kengeri - Mysore*	91.5	218.2
j	Yeswanthpur - Yelahanka - Doubling with overhead equipment	12.1	39.3
k	Yelahanka - Chennasandra - Doubling with overhead equipment	12.9	50.7
	Total Doubling	**417.9**	**1523.8**
Southern railway			
3	**Doubling**		
a	Kankanadi – Panamburu – Patch doubling	19.0	166.8
b	Calicut – Mangalore	221.0	791.6
	Total Doubling	**19.0**	**166.8**
South Central railway			
1	**New Lines**		
a	Gulbarga – Bidar	140.0	694.6
b	Munirabad – Mahabubnagar	246.0	743.5
c	Gadwal – Raichur	60.0	216.6
d	Cuddapah – Bangalore	255.4	1255.6
	Total New Lines	**701.4**	**2910.3**
3	**Doubling**		
a	Hospet – Guntakal	115.0	465.3
b	Raichur – Guntakal	81.1	303.0
	Total Doubling	**196.1**	**768.3**

Proposed Railway Projects

a) The list of proposed railway projects in the State (other than port connectivity) is given in the table below:

Sl. No.	Project	Nature of Project
1	Tumkur – Davangere via Chitradurga (160 km)	New Line
2	Dharwad – Belgaum (97 km)	New Line / Double Line
3	Gadag – Haveri (80 km)	New Line
4	Bijapur – Shahbad (140 km)	New Line

Sl. No.	Project	Nature of Project
5	Dharmavaram – Yelahanka - Devanahalli (5 km)	Bypass
6	Mysore – Hejjala – Gollahalli – Tumkur (35 km)	Bypass
7	Talaguppa – Honnavara (90 km)	New Line
8	Kushal nagar – Mysore (K.R.Nagar) (100 km)	New Line
9	Kottur – Chitradurga (76 km)	New Line
10	Bangalore – Whitefield (48 km)	Quadrupling

Source: Railway Infrastructure Plan for Karnataka

b) The details of the projects on electrification of railway lines including the length of the lines cost and status are provided in the table below:

Name	Length in km	Cost in Rs. crore	Rly outlay in 2009-10 (Rs. in crore)	Status
Bengaluru – Yashwanthpura via Hebbal and Yelahanka	46	30.59	0.01	Work will be completed by Dec 2009
Bengaluru – Mysore	140	100	28.00	Work will be completed along with doubling 2012.
Lingampalli – Wadi	161	116	11.47	Under progress completion by Dec 2010.
Total	**347**	**246.59**	**39.48**	

c) The rail connectivity of the minor ports to the rest of Karnataka is proposed to be improved in following ways:

- Construction of a new line between Hubli and Ankola
- Doubling the Hassan-Mangalore Line
- Construction of a new line between Honnavar and Talguppa

Existing and Proposed Rail Network

Annexure 4

Region – wise details of horticulture production in Karnataka

District	Production in tons 06-07
Kolar	1938592
Dharwad	1047830
Belgaum	903683
Haveri	677635
Chitradurga	659574
Chikmagalur	630973
Bangalore Rural	609260
Tumkur	558098

Source: Dept of Horticulture

Name	Production In Tons	Key regions	Area Wise Production In Tons
FRUIT CROP			
Mango	1558484	Bangalore Rural	177824
		Kolar	475791
		Tumkur	211626
Banana	1368765	Shimoga	104980
		Tumkur	149137
		Chikmagalur	117203
Citrus	314923	Bijapur	57550
		Gulbarga	28585
		Chikmagalur	23925
Grapes	281900	Kolar	46057
		Bijapur	55080
		Bangalore Rural	28609

Name	Production In Tons	Key regions	Area Wise Production In Tons
Guava	249823	Kolar	21029
		Bangalore Rural	14863
		Bangalore	14920
Sapota	232024	Kolar	62743
		Belgaum	19298
Pineapple	216635	Shimoga	123960
		Dakhsin Kanada	21692
Pomegranete	190455	Koppal	54103
		Bagalkot	26314
Jack Fruit	129547	Chikmagalur	40880
		Dakhsin Kanada	40806
VEGETABLE CROP			
Potato	682146	Hassan	301985
		Kolar	197773
Tomato	1315730	Kolar	534068
		Belgaum	144502
Onion	2721344	Dharwad	842310
		Chitradurga	332540
SPICE	603922	Haveri	67226
FLOWERS	191940	Hassan	62844

Source: Dept of Horticulture