Department of Industries & Commerce
Government of Kerala

INVEST KERALA

KERALA 2019
INVESTMENT OPPORTUNITIES

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Kerala's Industrial Vision

Kerala has always been at the forefront of socio-economic development and reforms in India. Numerous initiatives established in Kerala have gone on to be emulated at the National Level.

The Kerala Government is very keen to transform Kerala into a vibrant entrepreneurial society with inclusive, eco-friendly and sustainable economic growth. Kerala is looking to develop its industrial infrastructure and attract investments on a large scale and aims to become one of the top ranking States in the Country as far as Ease of Doing Business is concerned. Investments in the state will drive growth and raise the quality of life of its citizens. It will enable us to compete at an international level in terms of economic growth.

The government has taken very bold steps like 'The Kerala Investment Promotion Facilitation Act 2018, KSWIFT- online single window facility clearance mechanism, an Invest Kerala Web-portal- (www.invest.kerala.gov.in) a ready reckoner web-portal for Investor facilitation, and many other reforms at the department level. Further, an Investment Promotion and Facilitation Cell has been constituted at the State and District levels on behalf of the Kerala State Single Window Board and it will be responsible for the smooth interaction with applicants for issuing speedy approvals.

Parks based Industrial Developments are being planned in the state. Industrial parks for all thrust sectors are being developed and Plug & Play facilities are envisaged in each sector wise parks.

Kerala with abundant natural resources, skilled manpower, huge deposits in banks, world renowned traditional and ethnic products act as catalyst for potential investment. A new industrial culture beckons investors within India and abroad to participate in the growth story of this renowned state.

Infrastructure development of the state is now augmented through Kerala Infrastructure Investment Fund Board (KIIFB), a government owned financial institution of Kerala to mobilize funds for infrastructure development.

In Kerala, Investment opportunities in potential sectors like Manufacturing, Logistics, Industrial infrastructure, Marketing Hubs, Hospitality & Tourism, Information Technology, Bio Technology, Knowledge based industries, Healthcare, Retail etc. are expected to be 50,000 Crore INR or 7 billion US dollars.

We hope that these initiatives transform the State into a vibrant investor friendly destination.

Kerala

has for many years and continues to lead India on the social development front and leader in achievement of Sustainable Development Goals relating to health, education and gender equality

Highest Literacy Rate in India of 94% (as per 2011 Census)

Highest Human Development Index (HDI) of 0.784 in India (2018)

Best in Law and Order with great communal harmony

First fully Electrified state in India

Country's first state to make access to Internet a basic right

Best governed state in India for three consecutive years (Public Affairs Index)

Pioneered phenomenal reform initiatives (statutory single window clearance system, land reforms)

Leading Tourism Destination (over 157 lakh tourist arrivals in 2017)

Highest number of international airports and highest road density In India

Highest mobile network and optic fibre penetration in India

Reforms

are being undertaken at all levels to unleash Kerala's high growth potential

God's own country

Kerala is one of the few states to have marketed its natural beauty successfully to the leisure tourism sector. The state's unique heritage and cultural diversity have helped attract tourists from the world over.

Well-trained human resource pool

Kerala has a massive talent pool that is increasingly strategic to driving success for the state. The state holds some very good universities aligned to industry standards.

Gateway to international trade

Kerala has the 1st international transshipment terminal in India, having a design capacity of around 4 million TEUs

Promoting Knowledge-based industries

Kerala has been promoting knowledge-based industries such as IT/ITeS, computer hardware, etc. and is the first state having a technology park with CMMI level 4 quality certification & a world-class IT campus in Trivandrum.

Best startup ecosystem

Startup Village has incubated over 500 startups in Kerala. Maker Village is the most advanced incubation centre for hardware startups in India

Role-model state for healthcare development

Kerala is viewed as role-model state for its healthcare development with its child development indictors (IMR 6) levels being comparable to that of the US and other developed nations.

Stable Economic and Political Landscape, Large Talent Pool, Trustworthy Institutions and Reliable Social Infrastructure that ensures great quality of life and a positive environment for personal and professional growth.

Steady state economy

Kerala has a steady continuously growing economy. Over the past two-plus decades (1990 to 2018), Kerala has grown at an impressive rate, increasing its GDP from 12,195 Crore to 5,13,695 Crore. Further, the poverty rate also fell from over 31% to less than 8%, among the lowest in India

Strong public institutions

Kerala has among the best banking, education, and healthcare systems in India. The medical infrastructure is the most extensive in the country.

Digital Rights & e-Governance

Kerala recognises the importance of e-governance and the need to address issues of the digital divide in society. Policies are framed in order to make the objective of the internet as a citizen's right a reality.

High per capita income

In FY 2018, the per capita income was INR 1.49 Lakh compared to India's average of approximately INR 1.13 Lakh

Access to Large Talent Pool

Kerala has presence of excellent academic institutions like IIM, IIT, NIT, CET and many more technical institutions. There is an abundant talent pool with nearly 16,000 students graduating per year in electronics & allied branches from the big network of professional colleges, polytechnics, industrial training institutes and engineering colleges.

Advantage Kerala

Unique geography and natural advantages that opens up a world of opportunities

Large Urban Population

As per Census 2011, over 48% of Kerala's population lives in urban areas

High Literacy

Kerala's overall literacy rate of 94% is the highest in India. This has led the state to become a leader in industrial development and human development.

Ease of Doing Business

Kerala has been a pioneer in ease-of-doing business, implementing amendments and alterations to policies and proactively putting systems such as online single-window clearance (SWIFT) and common application form (CAF) in place.

Strategic Location

Kerala is situated on southern tip of India bordering the Arabian Ocean. Its location allows it to act as the gateway to all Middle East nations as well as the neighbouring countries of South Asia

Water Availability

Kerala is one of the few Indian states with an abundant supply of potable water. Its rivers, lakes and backwaters ensure that if used efficiently and conscientiously, they meet the domestic and industrial water needs. There are 53 reservoirs, and 44 lakes in Kerala.

Rich Natural Resources

Kerala has a glorious tradition in the export of seafood, coir, cashew, minerals and spices

Long Coastline

With a 585 km coastline, Kerala has great avenues for food processing, exports and sea-based resources.

Access to ports

Kerala has a major port at Kochi and 17 other ports, which are mostly seasonal. Of them developments are taking place in Vizhinjam, Thankassery, Alappuzha, Munambam, Ponnani, Beyporeand Azhikkal. Cochin Port handles 9% of all port traffic in South India.

Infrastructure Strength of Kerala

Transportation

Length of all roads	:	31,812 km
Number of National Highways	:	8
Length of National Highways	:	1,782 km
Road Density	:	590.14km / 100 sq. km
Number of Ports	:	1 major + 17 non-major
Number of Airports	:	4
Length of Railway routes	:	1257 km
Numberof Railway Stations	:	200

Communication

Post Offices	:	5064(one in every village)
Telecom Subscribers	:	43.98 Million
Tele density	:	121.61 per 100 inhabitants
Internet subscribers	:	19.8 Million

Energy

Installed Power Capacity	:	2956.47 MW
Hydel Power Capacity	:	2121.92 MW (77%)
Renewable Sources Capacity	:	157.99MW (5.34%)

25 Projects for a New Kerala

In the Budget 2019-20, the State Government announced 25 Projects that have the potential to deeply influence the future of Kerala as it looks to build back better after 2018 floods.

01 Industrial Parks and Corporate Investments

02 Start Ups

03 Malabar Coffee and Carbon Neutral Wayanad

04 Kerala Teeming with Coconut Trees

05 Integrated Rice Parks and Rubber Parks

06 New Kuttanad Package

07 Rejuvenation and Watershed Development

08 Malabar Rehabilitation and Restoration of Coasts

09 Public Sector Industries

10 Integrated Energy Mission

11 Designed Roads

12 Kerala to Electric Vehicles

13 West Coast Canal

14 North-South Parallel Rail Track

15 Kerala Boat League

16 SpicesRoute and Heritage Projects

17 Boards made of Coir replacing Wood

18 Non-Resident Keralite Investment and Protection

19 Kerala Bank

20 Hunger Free Kerala

21 Women Empowerment and Kudumbashree Branding

22 Placement for 10,000 Members from Scheduled Communities

23 Housing for All

24 Towards Educational Excellence

25 Universal Health Security Scheme

Thrust Sectors

- Petrochemical
- Textiles
- Healthcare
- Education
- Tourism and Hospitality
- Information Technology
- Nano & Biotechnology
- Agro and food processing (marine, coconut and dairy)
- Ayurveda
- Rubber
- Electronics
- Coir Processing
- Mining
- Wood Processing

Key initiatives to boost investment in Kerala

- Ease of Doing Business Reforms
- Kerala Industrial & Commercial Policy 2018
- KSWIFT: Kerala Single Window Interface for Fast and Transparent Clearance
- Online Intelligent Building Plan Management System (IBPMS)
- Invest Kerala Portal

- Publishing of SoP's and Checklists
- Online single window clearance mechanism
- Monitoring Committees at State, Districts and Industrials Parks
- Central Inspection System for compliance inspections.
- Introduction of Self Certification regime
- Third Party Certifications
- Exemptions for green and white category industries
- Increased validity of Licenses.
- Delegation of Power to district levels
- Parallel processing of application
- Joint inspections by Department
- Deemed approvals post the mandated timelines
- Elimination of redundant clearances
- Spot approval for registrations
- Auto renewal of Licenses
- Stop Memos to be issued only based on merit
- Engaging of Head Load Workers regularized
- Revamped Single Window Boards at State, Districts and Industrial Parks.

Kerala is undertaking significant reforms and launching key initiatives to ensure it is all set to become a Business and Investment friendly State.

Catalysts for Industrial Growth

Kerala State Industrial Development Corporation (KSIDC)

- KSIDC has initiated major industrial and infrastructure projects, which are strategically important to Kerala's industrial and economic development.
- KSIDC also plays a vital role in entrepreneurship development.
- It has over 5 decades of proven track record of attracting a commendable volume of investment to the state with more than 750 projects.

Directorate of Industries & Commerce (DIC)

- Acts as a facilitator for industrial promotion and sustainability of MSMEs (Micro Small or Medium Enterprise) and traditional industrial sector.
- DIC is the control centre for the 14 District Industries Centres, 2 Common Facility Service Centres, Documentation Centre, 39 Development Areas having a total acquired area of 2424.26 acre.

Kerala Industrial Infrastructure Development Corporation (KINFRA)

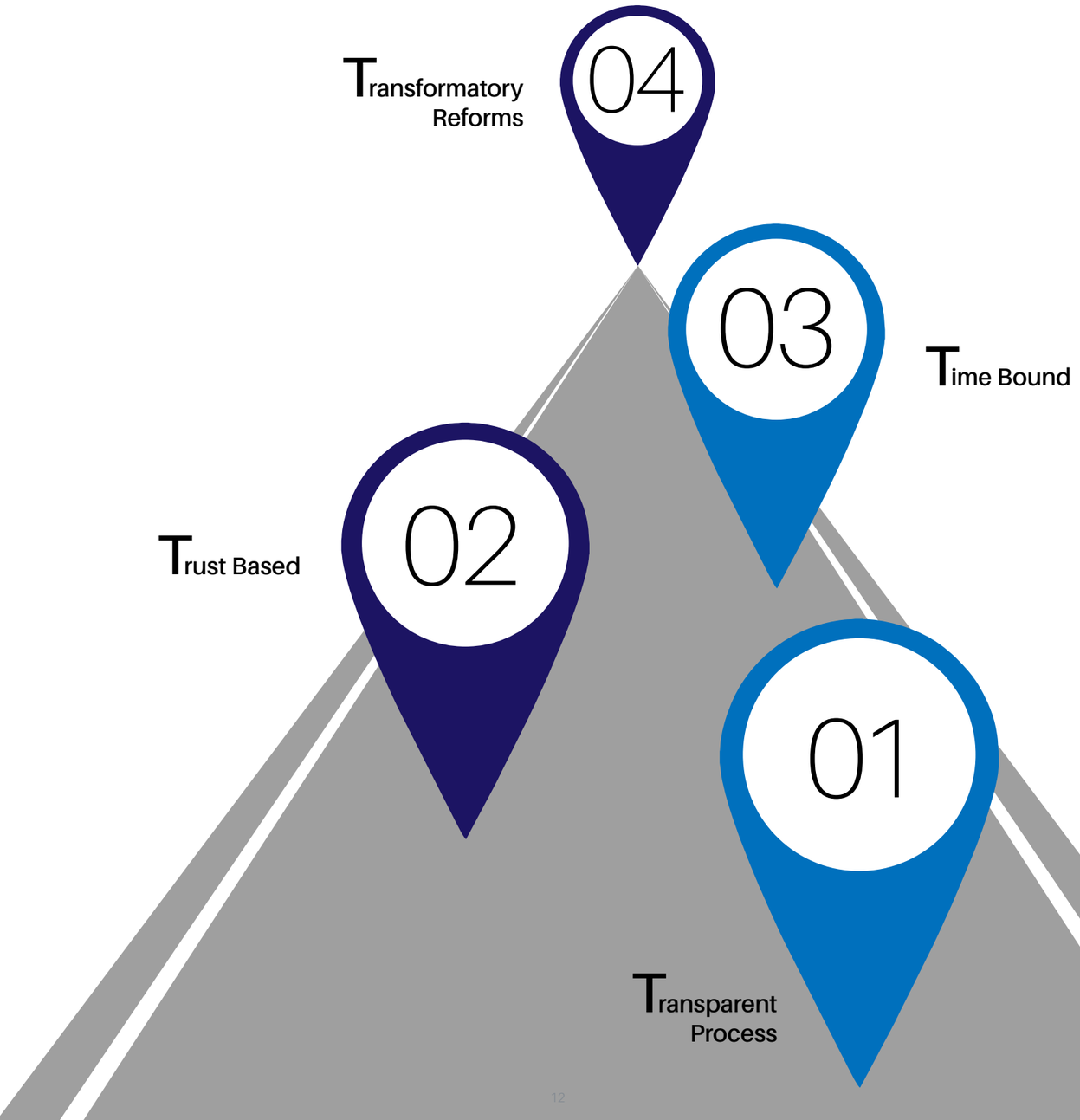
- KINFRA is dedicated to catalyze Industrial growth in Kerala by providing the best industry specific infrastructure.
- Over the past 25 years it has developed 24 well-defined Industrial parks, paving the way for the launch of 700 units creating 20,000 direct jobs in the state.

Kerala Small Industries Development Corporation (SIDCO)

- SIDCO acts as a 'Total Solution Provider' for Small Scale Sector offering facilities and assistance to set up small scale units across Kerala.
- Infrastructure under SIDCO include Major Industrial Estates, Mini Industrial Estates, Industrial sheds, Industrial Parks and Production units.

KSIDC | Government of Kerala Directorate of Industries & Commerce | KINFRA INSPIRING GROWTH | KERALA SIDCO LTD

4T's The Foundation of Ease of Doing Business in Kerala



Top EoDB Reforms

- Access to Information and Transparency Enablers
- Single Window Clearance
- Environmental Registration Enablers
- Availability of Land
- Construction Permit Enablers

Ease of doing business initiatives in Kerala aims to transform the state into a vibrant investor friendly destination and to accelerate its industrial growth and employment generation across all categories. Government of Kerala have taken earnest steps to improve micro and macro factors contributing to the successful running of business environment in the state. The amendments / modification made as a part of the Ease of Doing Business initiatives will create an enabling environment for establishing, running and winding up enterprises in the state through transparent processing of application with clearly defined procedures, evaluation criteria and timelines.

K-Swift

Kerala Single Window Interface for Fast and Transparent Clearance

www.kswift.kerala.gov.in

An elaborate e-platform to facilitate the citizen – government interface focusing on the transparency dimension will be a game changer in the Ease of Doing Business arena of the state.

A transparent fast track online system for entrepreneurs to avoid procedural delays in getting statutory clearances from various authorities concerned throughout the life-cycle of projects.

K-Swift ADVANTAGE

- Entrepreneur friendly portal to obtain NOC's with minimal 'running around'.
- Real time status update on the clearance process with timelines.
- Auto generation of deemed approval based beyond set timeline.
- Common Application Form, Integrated payment mechanism.
- Downloadable digital approvals at finger tip.

Invest Kerala Portal

www.invest.kerala.gov.in

A common integrated web portal named "Invest Kerala", for the Department of Industries and Commerce, Government of Kerala (GoK). The portal will act as a single window facilitator for investment promotion for prospective and aspiring investors.

The Invest Kerala Portal will enable the Department of Industries and Commerce in areas such as

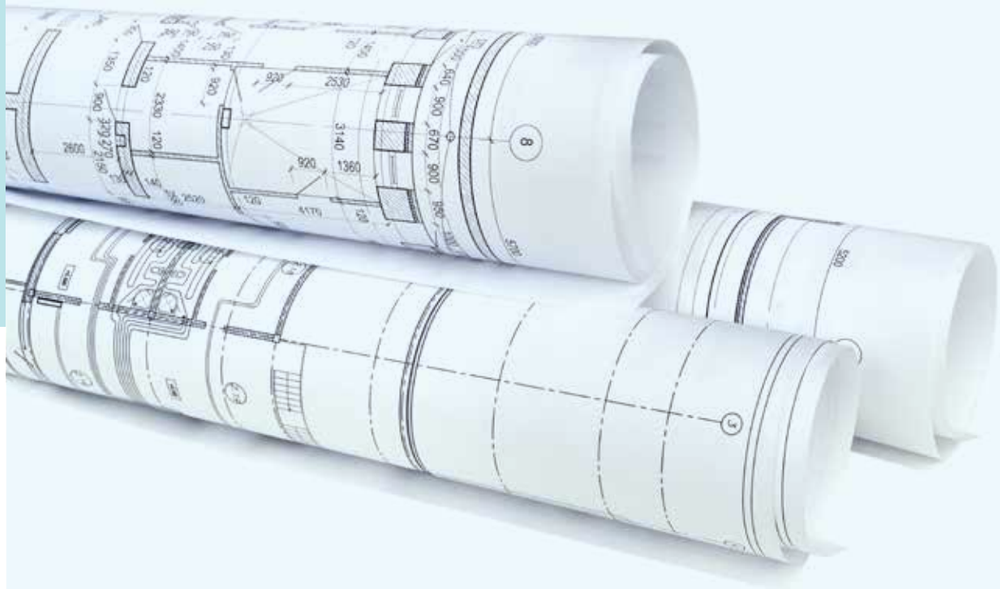
- Single window facilitator for investment promotion.
- Integrated view of various information/ activities/ services of existing portals of KINFRA, DIC, KSIDC, K-BIP.
- Incorporation of the requirements of Ease of Doing Business initiatives of the state.
- Common repository for land bank details, investor wizard, various services, schemes, lenders, and relevant reports.
- Dynamic investor query resolution.

Intelligent Building Plan Management System (IBPMS)

www.ibpms.kerala.gov.in

Repository of information on various investment opportunities in the state, details of land bank, schemes of various departments, information in services available.

The Kerala government launched an Intelligent Building Plan Management System (IBPMS) that provides single-point, integrated and holistic online development permissions to applicants in specified timelines for Ease of Doing Business (EODB).



Investment Avenues for KIIFB

To finance critical and large infrastructure projects, the Kerala Government has initiated steps to meet long term requirementsand build the institutional frameworkneeded to raise and mobilise funds through KIIFB. The main investment avenues for KIIFB are as follows –

- Infrastructure Investment Trust (InVIT)
- Infrastructure Debt Fund (IDF)
- Alternative Investment Fund (AIF)
- Financial instruments such as General Obligation Bonds, Land Bonds, Infra Bonds
- Loans from domestic/ bilateral/ multilateral financial institutions
- Tailor-made investment packages through existing government financial agencies like KSFE
- Guaranteed payments from Government such as grants and annuities
- Returns from investment

Projects in the Power, Information Technology, Culture and Industrial Infrastructure sectors have been conceived with revenue generating potential which will be utilised to repay the financing provided by KIIFB

Kerala Infrastructure Investment Fund Board

KIIFB came into existence on November 11, 1999 to manage the Kerala Infrastructure Investment Fund. The Fund was established with the main objective of **providing investment for projects in the sectors of Roads, Power, Irrigation, Water Supply, Ports, Inland Navigation, Solid Waste Management and Drainage.**

KIIFB is the key SPV for mobilising and channelling infrastructure investment funds to the various infrastructure SPVs. Recently KIIFB has supported marque Infrastructure projects of Kerala

Kerala Fibre Optic Network

Digitally connecting 33,000+ government institutions and free internet to 2 Lakh households

Petrochemical and Pharma Park, Kochi

600 Acres of Industrial Park for Chemical Products

Coastal and Hill Highway

Connecting Kerala via 18,000 KM+ of Highways

Life Science Park, Trivandrum

125 Acres of Healthcare, Herbal, Agriculture and Biotechnology Zone

Transgrid 2.0

Creating a Power Highway of High Capacity Transmission Lines

Hi Tech School Programme

Introducing 45,000+ Smart Classrooms

Masala Bond –Successfully raised INR 2150 Cr

KIIFB's recent debut Masala Bond is the first offshore capital market issuance from a state-level entity from India ever, and also the largest dual currency issue by a sub-sovereign backed entity from entire emerging markets and Asia raising INR 2150 Cr in March 2019. The deal is also significant for the state as the international investors have shown faith in a credit backed by a sub-sovereign from the emerging markets for the first time.

As of March 2019, KIIFB has approved 534 projects at an estimated cost of INR 42,363 Crore with major proposals approved in the sectors of Public Works, Power, Water Resources, General Education, Information Technology, and Health & Family Welfare.

Sector Specific Industrial Parks

High-Tech Park, Ernakulam
- 243 acres
- Kochi Airport (20 Kms away)
- Kochi Seaport ICTT (20 Kms away)

Defence Park Palakkad
- 60 acres
- Coimbatore Airport (55 Kms away)
- Kochi Seaport & ICTT (128 Kms away)

Aerospace Park, Trivandrum
- 500 acres
- Trivandrum Airport (14 Kms away)
- Kochi Seaport (202 Kms away)

Megafood Park, Alappuzha
- 68 Acres
- Kochi Airport (55 Kms away)
- Kochi Seaport & ICTT (35 Kms away)

Green Field Airport, Sabarimala
- 2268 acres

Global Ayurvedic Village Project, Trivandrum
- Thonnakkal -7.48 acres
- Varkala - 63.25 acres

Film & Video Park, Trivandrum
- 75 acres
- Trivandrum International Airport (17 Kms away)
- Kochi Seaport (202 Kms away)

Port Logistics Park, Ernakulam
- 150 acres
- Kochi Airport (27 Kms away)
- Kochi Seaport (20 Kms away)

Electronic Manufacturing Cluster (EMC), Ernakulam
- 67 acres
- Kochi Airport (27 Kms away)
- Kochi Seaport (28 Kms away)

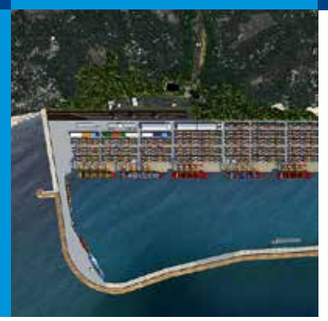
Semi High Speed Railway Project
- Trivandrum to Kasaragod
- 50,000 crore project

Medical Devices Park, Trivandrum
- Trivandrum Airport (20 Kms away)

Vizhinjam Logistics Port, Trivandrum
- Trivandrum Airport (25 Kms away)
- Kochi Seaport (224 Kms away)

Mega Food Park, Palakkad
- 79.42 acres
- Coimbatore International airport (55 Kms away)
- Kochi Seaport & ICTT (150 Kms away)

Agro Park, Kasaragod
- 100 acres
- Kannur Airport (88 Kms away)
- Azhikkal Seaport (72 Kms away)
- Mangalore NMPT (84 Kms away)



Defence Park

KINFRA Defence Park is being established in 60 acres of land at Ottapalam, Palakkad with assistance from the Government Of India under the Modified Industrial Infrastructure .

Area	Location	Total Project cost	
60 acres	**Ottapalam, Palakkad**	**Rs. 130.84 crore**	Central Assistance- Rs 50 crore under Modified Industrial Infrastructure Up gradation (MIIU) Scheme.

Thrust sectors

- Defence manufacturing
- Defence Navigation Products
- Avionics
- Naval Systems
- Computer Hardware and electronics
- Tactical communication system
- Protective clothing and Personal equipment

Components

- Land on lease
- Standard Design Factory building of 2,64,638Sq.Ft
- Administrative building of 72,406Sq.Ft
- Warehouses of 28,317 Sq.Ft area
- Common Utility Centre of 7,271 Sq.Ft.

Other Components

- Service yard
- Car parking, Road and Compound Wall
- Conference rooms
- Paint booth
- Training rooms
- Tool rooms
- Water Supply
- Power Supply

Electronic Manufacturing Cluster

KINFRA Electronic Cluster is being established in 67 acres of land in Kakkanad,Kochi with assistance from the Government Of India under Electronic Manufacturing Cluster Scheme of the Ministry of IT & Electronics

Area	Location	Total Project cost	
67 acres	**Kakkanad, Kochi**	**Rs. 140.01 crore**	Central Assistance- Rs 50 crore under Electronic Manufacturing Cluster Scheme of the Ministry of IT & Electronics

Thrust sectors

- Computer Hardware and electronics
- Communication system

Components

- Developed plots
- Manufacturing Complex
- Standard Design Factory of 1lakh sq.ft

Other Components

- Internal Roads
- Water Supply
- Power Supply

Land

- 20 Acre Phase-I development in progress
- Allotment process started

KINFRA Mega Food Park, Palakkad

KINFRA Mega Food Park is set up under the Mega Food Park Scheme of the Ministry of Food Processing Industries (MOFPI) Govt of India.

Area	Location	Total Project cost	
99 acres	**Kanjikode, Palakkad**	**Rs. 119.02 crore**	Central Assistance-Rs 50 crore under Mega Food Park Scheme, MOFPI,Govt of India

Thrust sectors

- Food Processing and related activities

Components

- Cold Storage, (4500 MT capacity)
- Ripening Chamber (30 MT/Day capacity),
- Warehouse 7500 sq m area),
- Pack House (10 MT/hr capacity),
- Spice Processing Facility (15 MT/Day capacity),
- Standard Design Factory

Other Components

- Water supply
- Quality control laboratory
- Effluent treatment plant
- Electricity

Global Ayurveda Village , Trivandrum

KINFRA proposes to set up Global Ayurveda Village in Thonakkal & Varkala,Trivandrum.

Area	Location	Total Project cost	
99 acres	**Kanjikode, Palakkad**	**Rs. 119.02 crore**	Central Assistance-Rs 50 crore under Mega Food Park Scheme, MOFPI,Govt of India

Thrust sectors

- Ayurveda

Components

- Knowledge Centre
- International Academy
- Ayurveda Wellness Zone
- Research & Development
- Speciality Health Zone

Other Components

- Water
- Quality Control Laboratory.
- Power

Sector Specific Industrial Parks

GREENFIELD AIRPORT, SABARIMALA

The 5th International airport proposed at Sabarimala is spread over 2268 acres at Pathanamthitta district. The airport will be close to two national highways and five major state roads.The airport will be a boon to the pilgrims who visits the holy shrine at Sabarimala. Over 5 crore pilgrims visit Sabarimala shrine during its three-month-long pilgrimage season. It will also have a major impetus on the tourism at Pathanamthitta district which is already a much sought after tourism destination. The total project outlay is estimated at Rs. 2600 crores.

SEMI HIGH SPEED RAILWAY PROJECT

The Rs. 50,000 crore project, which will run parallel to the coast across almost the length of the state, will connect Trivandrum with Kasaragod, the northernmost district. The railways plan to operate semi-high speed trains, which travel at a speed of 100-150 km per hour, on this corridor. The high-speed corridor can be used by millions of commuters for local travel between major cities and suburbs.

AEROSPACE PARK

The proposed aeronautical industry cluster at Kannur district is spread over 500 acres. Estimated at a project value of Rs. 600 crores, the aerospace park project aims to develop a favorable ecosystem that includes setting up of a large manufacturing base with all basic infrastructure facilities for aerospace components and devices, in the long run. Scope of investment is there for setting up manufacturing and assembling units, aviation and aerospace training, engineering services, maintenance - repair – overhauling services, aircraft manufacturing etc. The park has an investment potential of Rs. 2000 crores.

CONVENTION CENTRE, KOCHI

Conceived as a joint venture between KINFRA and ITPO, the convention centre will be located at Kakkanad, Kochi. The 15 acre convention complex will house state-of-the-art facilities that can accommodate dynamic events, large and small such as open exhibition area of uto 1 lakh sqft, parking facility for more than 1000 cars, conference halls, food courts etc. The convention centre has an investment potential of Rs. 200 crores.

PORT LOGISTICS PARK

The geostrategic position of Kochi and the presence of a busy port makes it an ideal place for setting up a port based logistic park. Government proposes to acquire 100 to 150 acres of land for establishing a logistic park in Kochi with good road, rail and air connectivity. The proposed park will have wide roads sufficient for the free flow of two way traffic, space for multiple clients and industries, ample truck and office parking space, state-of-the-art warehousing & cold storage facilities, emergency services (fire fighting system & ambulance), public facilities like banking, insurance, office space, accommodation, catering and other service facilities. The estimated outlay of the project is around Rs. 6200 crores.

AGRO PARK

The Agro park in Kanhangad, Kasaragod district, is proposed to start an estate focussing on agro based food processing units. Total Land area is 100 acres of uneven terrain. Kanhangad is an area where food processing cluster may be formed wherein produce from district could be processed and made to good quality food products for customers. Around 675 units in number are currently engaged in the production of food processing and allied work related to consumption. Coconut, cashew, fruits like mango, pine apple, sapotta, jack fruit are the easily and locally available as raw materials which can be processed and manufacture good product to compete in national market. Currently bulk of the local produce especially coconut and fruits is transported to nearby industrial units in mangalore belt for processing.

VIZHINJAM LOGISTICS PORT

Vizhinjam benefits from its geographic location – it is almost located at the tip of the southern peninsula on the west coast of India. It is strategically located approximately 10 nautical miles from the international shipping route which could attract large share of the container transshipment traffic destined or originated to and from India. Vizhinjam port is also close to the southern railway which connects to Mumbai through Konkan railway. It is proposed to develop a logistics hub at Vizhinjam deep water transshipment port in-order to support the upcoming manufacturing enterprises in MSME and other large sectors along with container freight stations, ancillary and service enterprises. Total project value is estimated to be around Rs. 3000 crores.

The Government of Kerala has been pro-active and has taken up many initiatives to ease the doing business environment in the state.

Explore Kerala

Promising Investment Opportunities

Kerala is fast emerging as one of the most preferred investment destinations in the country. The state has shown tremendous growth in its industrial and services sectors in the past decade. The Government of Kerala has rolled out many policy reforms to clear the hurdles for investment and accelerate industrial growth. The socially evolved state offers an investment climate with a skilled work force and a managerial class sensitive to local culture and international milieu.

The state in its journey to create an investment climate keeping in mind the objective of sustainable and eco-friendly development has brought reforms in policy regulation, law and order, setting up infrastructure, connectivity through road, rail, air and sea etc. Kerala has invested heavily in developing infrastructure facilities like power, transport system, airports, ports and sector specific industrial parks and is taking efforts to attain a balanced and sustainable industrial growth, and to convert Kerala into global trade hub and an investor-friendly state, without hampering the ecology and environment of 'Gods own country'.

Government of Kerala aims to take the state to a next version of economic development and is looking forward to create comprehensive investment opportunities across sectors. To accomplish this, the state is inviting investments to fuel further growth in the state across sectors. Government shall offer various incentives to existing as well as new units. Various project profiles are showcased for investors to take-off their industrial journey in the state. Projects are classified as per below criteria.

Category	Investment (in INR Crores)		Direct Employment
Small Scale	Less than 10	And/or	50 to 200
Medium Scale	10 to 50	And/or	200 to 300
Large Scale	50 to 100	And/or	300 to 500
Mega Projects	100 to 200	And/or	500 to 1000
Star Projects	200 or more	And/or	1000 or more

Project Profiles Snapshot

Electronic Hardware Park
- INR 1200 Cr
- Amballur, Cochin

Petrochemical Park
- INR 1864 Cr
- Ambalamugal, Cochin

Propylene oxide manufacturing
- INR 5000 Cr
- Ambalamugal, BPCL-Kochi Refinery

PVC Manufacturing
- INR 3000 Cr
- Ambalamugal, BPCL-Kochi Refinery

Super Absorbent Polymer manufacturing
- INR 900 Cr
- Ambalamugal, BPCL-Kochi Refinery

Integrated Manufacturing Cluster (IMC)
- INR 10000 Cr
- Cochin to Palakkad

Multi-modal Logistics Park (MMLP)
- INR 1500 Cr
- Cochin

Aerotropolis
- INR 850-1000 Cr
- Kannur (Airport premises)

Cryogenic Warehouse
- INR 300 Cr
- Puthuvypeen, Cochin Port

Bio 360 Life Sciences Park
- INR 1040 Cr
- Mangalapuram, Trivandrum

Rubber Industrial Park
- INR 6 Cr
- Kanjirapilly, Kottayam

Kerala Maritime Cluster
- INR 3500 Cr
- Cochin Port (Wellington Island)

Electronic Hardware Park

Star Project

Manufacturing

Amballur
Ernakulam

INR 1,200 Cr
USD 171 MN

NH 66
NH 85
NH 544

Ernakulam Junction (ERS)
Ernakulam Town (ERN)
Kollam Junction (QLN)

Cochin
International
Airport

Cochin Port

USD 400 Billion

Anticipated size of electronics market in India by 2022

2.2%

India's share of worldwide total electronics manufacturing output

OVERVIEW

The Electronics Hardware Park is proposed to be set up at an extent of 100 acres of land in Amballur with KSIDC as the nodal agency. The project aims to promote manufacturing and assembling of electronic hardware in Kerala and will also include a research and development unit. Estimated to draw investments to the tune of INR 650 crore through manufacturing and assembling of electronic equipment ranging from television, refrigerator, washing machine, computer to mobile handsets and by attracting companies in the semiconductor and electronic components sector.

Park shall be operational by 2020. In the first phase, 50 incubation units are planned to be set up. KSIDC envisages to implement the project by PPP mode.

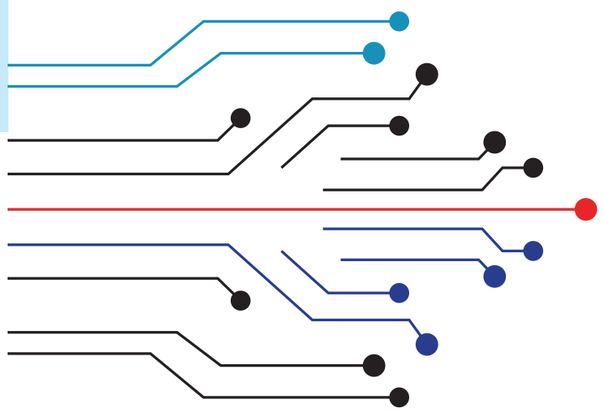
24.4%

Projected growth rate of Electronics Market during 2012-20

The Electronic Hardware Park initiative is expected to bring about a course correction in electronics manufacturing in India, helping India keep pace with the growing demand for electronic goods

Electronics Industry in Kerala

- Presence of Greenfield Electronics Manufacturing clusters in Ernakulam.
- Increased spend on R&D and stepping up innovation.
- Increasing penetration of high-end electronics products such as HDTVs, LCDs, LEDs, and tablets nearly 19,000.
- Ample availability of skilled labour in the state.



Key players

- KELTRON
- OEN India Limited
- CII Guardian International
- KINFRA Electronic Manufacturing Cluster (EMC)
- TELK
- Maker Village Kochi
- CDAC
- BPL
- SFO Technologies

Project Parameters

01 Capacity

First phase –Electronic hardware manufacturing/ assembling/ programming/ testing and software development unit will be set up

Other facilities planned –Tool Room, PCB/ Chip Design, Embedded Technology Training Center, Incubation and R&D Center, Electronic Testing and Development Centre with Training Facility, Standard Design Factory

02 Land

100 acres identified in Amballur, Ernakulam

03 Raw Material and Utilities

Power, Boundary, Land development, Internal roads, Storm water drains, Street lighting, Water and Sewage treatment plant, Waste disposal system, Electrification infrastructure, Warehousing, Training Facility, Conference facility, IT & Telecom infrastructure, Tool room, CAD/CAM centre, Plastic molding, Packaging, Testing facilities, Semiconductor and Electronic components

04 Employment Potential

30,000(including indirect)

05 Expected Turnover

INR 1,000 Crore (USD 142 MN), INR 3,000 (USD 428 MN) Crore by 2020

06 Project Cost

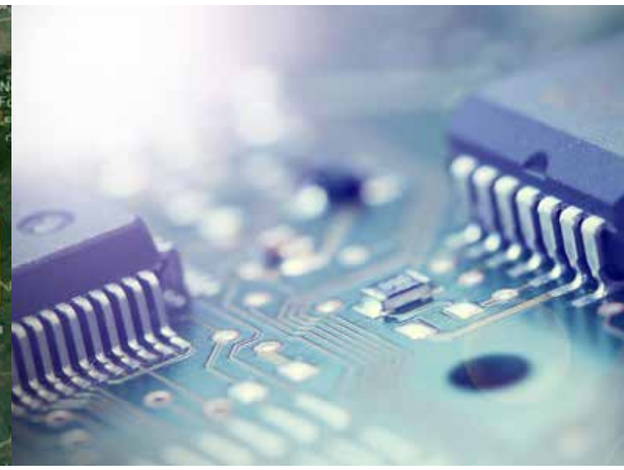
INR 1,200 Cr (USD 171 MN)

07 Means of Finance

The proposed Debt -Equity ratio is 60:40. Promoter's contribution of INR 480 Crore and Term Loan/Borrowings/Investments in tune of INR 720 Crore.

Market Landscape

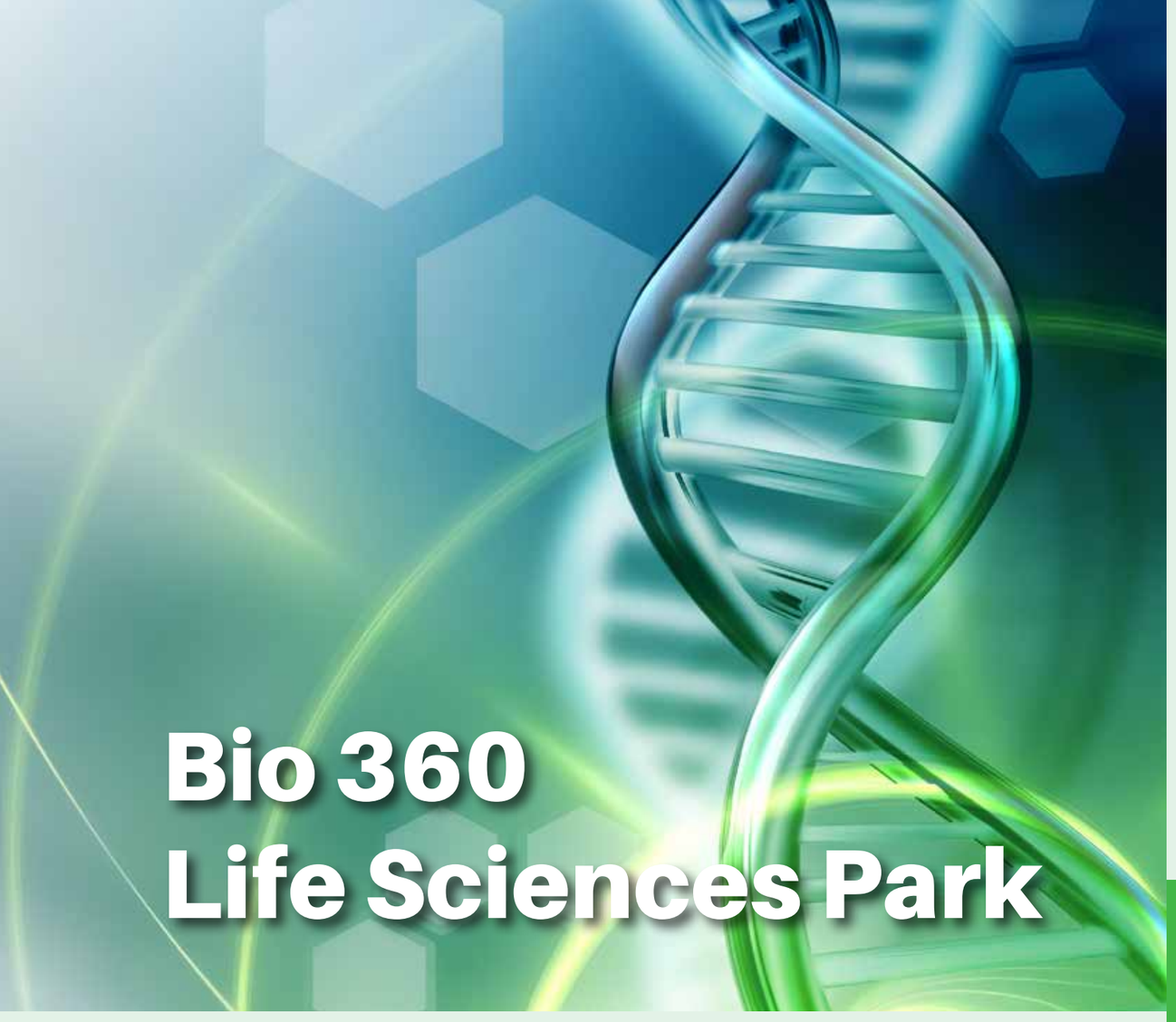
- In India, the domestic manufacturing capacity is less than 45 per cent of the consumption, exposing the huge gap in the demand and supply situation.
- The free trade agreements signed with various countries have made it mandatory to ensure rapid growth of domestic manufacture of these goods,a major chunk of which are imported from China. In March 2017, Xiaomi announced its 2nd manufacturing plant along with Taiwan based company Foxconn, in Andhra Pradesh. This will help create employment in 100 nearby villages for at least 5,000 people
- High production is majorly contributed by accelerating demand for advanced TVs, mobile phones, computers & defence related electronic equipment's during FY 07 to FY 15
- The National Manufacturing Policy of Government of India and other export promotion policies specialize firms in production activities and achieving results for global competitiveness.
- To be competitive at an international level large size electronic hardware technology parks with high-class infrastructure is needed for the state to flourish. Ernakulam, Kannur and Thiruvananthapuram are the key districts with electronics manufacturing clusters.



**Indicative positioning of land*

Investment Opportunity

The ambitious project focuses on cashing in on the booming market in India for electronic products and is expected to uplift the region into an attractive manufacturing destination. The project involves the development of the first-of-its-kind facility in the state, envisaged as an electronics hub to promote the manufacturing and assembly of hardware, as well as to support the development of qualitative infrastructure including R&D centers. The project is in line with the National Manufacturing Policy of GoI and hopes to generate business of INR 1,000 crore. The park is expected to draw investments for infrastructure development, from manufacturers and assemblers of electronic equipment, computers and mobile handsets and by attracting companies in the semiconductor and electronic components sector.



Bio 360 Life Sciences Park

Star Project

Healthcare Pharmaceuticals

Mangalapuram, Trivandrum

INR 1040 Cr USD 148 Mn

NH 17
NH 66

Trivandrum Central (TVC)
Trivandrum Pettah (TVP)

Trivandrum International Airport

Cochin Port
Vizhinjam Port
(Under construction)

USD 10 Billion

Life Sciences Industry generates around USD 10 billion of trade surplus every year, allowing it to neutralise around 4 to 5 per cent of total energy imports for India.

USD 17.27 Billion

India's pharmaceutical exports in 2017-18

Overview

Government of Kerala is establishing a Life Sciences Park at Trivandrum with world class infrastructure facilities for life science based industries and R&D institutions. KSIDC has envisaged setting up of an innovation ecosystem through establishment of a Park that is dedicated to promote Life Sciences in the region of Kerala. The Park in Trivandrum will provide the first integrated approach to life science research to markets covering all segments such as agriculture, food and nutrition, human health, animal health, industrial biotechnology and medical technology. Phase I of the proposed Life Sciences Park is under development and is planning to offer facilities such as an Innovation cum Incubation Center, Research cum Learning Center, Animal Science facility, Bio-Process facility, a Medtech prototyping, design and validation center and toxicology services among others. The objective of Phase I is to encourage innovation and provide various support services to incubated companies within the Bio Park. The infrastructure facilities such as power, water and internal roads have been completed in Phase I and implementation of projects are at various stages. Some of the projects that are coming up in park are Institute of Advanced Virology, Medical Devices Park, Innovation cum Incubation Centre etc. A small Lab Animal facility is also planned in Phase I to take care of the need of CROs/Vaccine companies as part of new drug discoveries. The second phase of the Bio 360 Life sciences Park is envisaged as a critical extension of Phase I, whereby it is proposed to acquire and develop another 130 acres of land for industrial use by companies in various sectors of life sciences to setup and operate standalone commercial manufacturing or related facilities. While Phase I boasts of offers significant level of shared facilities and incubation space for smaller companies, Phase II will offer larger parcel of land for companies to setup large scale commercial activity with their own facilities. Additionally, Phase II companies can also benefit from the shared infrastructure in Phase I. To the extent reasonably feasible, Phase II will cluster similar companies together, leading to an increase in synergy through mutual collaborations. The first phase of development with above said facilities would be ready by March 2021.

11-12%

The industry will sustain its growth trajectory of 11 to 12%

The industry is poised to grow 7 to 8 times to a size of USD 190 -200 billion by 2030.

- The life sciences industry has also built strong capabilities across all parts of the value chain.
- In manufacturing, India continues to have the highest number of FDA-approved formulation plants outside the US.
- India is the largest provider of generic drugs globally.
- In R&D and regulatory, Indian industry has accounted for 32 per cent of the ANDA filings last year, second only to the US at 44 per cent.

Project Parameters

01 Land

Land notified

- First phase-75 acres. Under possession is 70 acres
- Second phase -160 (128.50) acres. Under possession is 86 acres

Land allotments

- 12.75 Acres (Allotted); 30 Acres (under processing)

Balance land allottable

- First phase -14.25 acres Second phase -86 acres

02 Basic Infrastructure completed

Dedicated Power & Water supply

Internal Roads

03 Common Infrastructure proposed

First Phase

- cGMP compliant bio-processing facility,
- Small Laboratory Animal facility
- Wet & Dry Laboratory space
- Incubation Centre

Second Phase

- Power, Water, Internal roads

04 Project Cost

First phase -INR 625 Cr

Second Phase –INR 415 Cr

05 Existing Units

- Polyskin Life Sciences (P) Ltd
- Research cum Learning Centre by Kerala Veterinary & Animal Sciences University
- Institute of Advanced Virology (Phase 1)

06 Existing Projects under construction or design stage

Medical Devices Park –2,50,000 sq. ft.

Bio Innovation Hub –3,00,000 sq. ft.

Institute of Advanced Virology (Phase2) –80,000 sq. ft.

07 Expected Turnover

- First phase -INR 1000 Cr
- Second phase -INR1500 Cr

08 Employment potential

First phase -4000 nos.

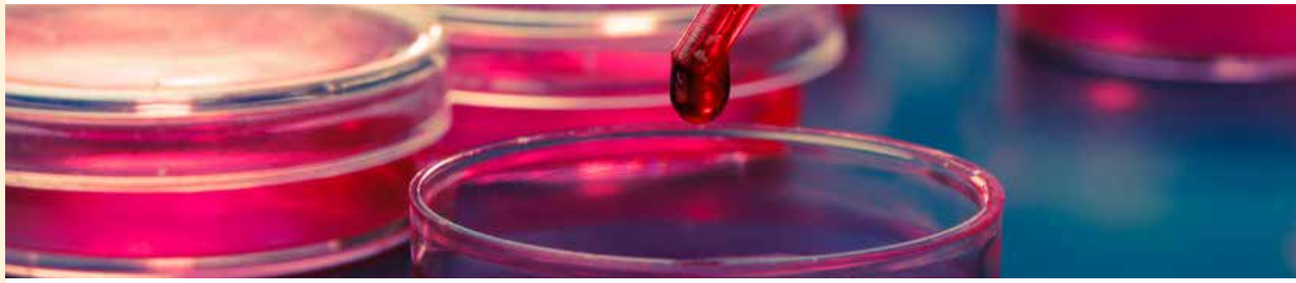
Second phase –6000 nos.

09 Expected Investment

- First phase –INR 1500 Cr
- Second phase –INR 2500 Cr

Market Landscape

- Indian industry has been a driver for access and affordability in life sciences. Indian drugs are available at an affordable price as compared to markets globally.
- India is the primary supplier of essential medicines for numerous diseases, helping save millions of lives globally. India's contribution extends to developed markets such as the US as well, where through its position in the generics market, the industry is significantly reducing healthcare.
- In addition, it also generates a significant number of jobs for India. Estimates indicate that around 2.5 million people are currently employed by the industry (including some of the industries such as chemists, stockists, etc).
- India has also been able to build a strong position across various segments of the market. In pharmaceuticals, India is now the eighth largest country by value globally with one of the highest growth rates.
- It has also been able to build a strong position in key markets such as the US. In clinical trials, India continues to be one of the top 15 destinations globally based on the number of trials conducted between 2003 and 2013.
- The State's rich bio-diversity comprising of abundant flora and fauna has always fostered a thriving R&D culture, giving birth to many research institutions in agriculture, Ayurveda, medical sciences, bio-technology, fisheries, marine sciences and more.



Investment Opportunity

- The Bio 360 Life Sciences Park would provide developed plots for large and Integrated Bio-IT companies to set up their campuses and ready-to-use modular officers, wet and dry lab space for intermediate, small and start-up companies.
- The immense knowledge base concentrated in the R & D clusters near the Park as well as across Kerala will greatly enhance the Park's efficiency as a single source R&D and knowledge centre for the industry.
- The Start-up firms, small scale enterprises, student and scientist entrepreneurs, and companies with expansion plans will particularly benefit from the proposed Incubation Centre.
- 'Plug-n-play' manufacturing space is guaranteed for commercial scale operations at post-incubation stage
- The park is India's first research focused park with an integrated approach covering all segments such as medical technology, pharmaceuticals, healthcare, biotechnology.
- The park provides ultra-modern facilities such as a cGMP compliant bio process facilities for pilot scale production and a pre-clinical toxicology laboratory for functional and strategic requirements.
- The park is poised to be focal point for convergence of research innovation skill development to further advance the frontiers of science.
- An extent of 86 acres of land has already been acquired and steps have been taken to take possession of remaining parcels of land so as to make about 125 acres of land in contiguous form.
- KSIDC is keen in associating with major players in Life Sciences sector to develop the Phase II on PPP mode. Co-developer can conceive any projects in Life Sciences domain.
- The cost of land can be treated as equity of KSIDC, while, Co-developer can create all basic industrial infrastructure such as power, water and internal roads including common facilities needed for Life Sciences/Biotech ventures.

Petrochemical Park

Star Project

Infrastructure

Ambalamugal
Ernakulam

INR 1,864 Cr
USD 263 MN

NH 544
NH 66
NH 49

Ernakulam Junction (ERS)
Ernakulam Town (ERN)
Tripunittura (TRTR)

Cochin International Airport

Cochin Port

15.5 mn Tonnes

Expanded capacity of Kochi refinery of BPCL, up from 9.5 MN tonnes

36422 thousand MT

Production of major petrochemicals in India 2016-17

OVERVIEW

KINFRA proposes to develop a Petrochemical Park of international standards at Ambalamugal, in Ernakulam district of Kerala. The project is intended to create an Industrial Park with all modern facilities exclusive for the Petrochemical downstream Industry. The Petrochemical Park is established in approximately 481.79 acres in the FACT premises. The Park is expecting investments in the field of automobile industry, Building Construction, Plastic Industry, Pharmaceutical, textile, Consumer Durables etc. Propylene Derivative Petrochemical Project (PDPP) of Kochi Refinery is expected to complete in 2019. Major products expected are Plasticisers, Paint & Resin formulation, Dyes, Herbicides, textile finishing, Solvents and Acrylate esters, Paper printing chemicals, Pharmaceuticals, powder coating products, leather finishing, etc.

INR 35344 Crores

Exports of major petrochemicals in India during 2016-17

Import of major petrochemicals stood at INR 84537 crores in 2016-17 with a CAGR of 5.21%

Petrochemicals account for 30 per cent of the country's USD 120bn chemical industry in 2016, which is likely to grow about 11 per cent in the coming years to hit US$250 billion by 2025

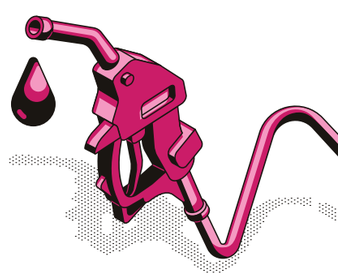
Major Petrochemical Market in India

- The Indian Government allows 100% FDI in chemicals sector and the domestic petrochemical industry is in the process of investing over USD 25 Bn.
- The expanded BPCL refinery at Kochi will produce 5 lakh tonnes of propylene annually, the basic raw material for the petrochemicals units.
- Polymer production constituted 23% of total major petrochemical production in India during 2016-17.

PARK AREA STATEMENT			
TYPE	AREA (SQ.M)	ACRE	%
Petrochemical Plots	601478.2	148.63	48.87
Pharama Plots	121406.6	30.00	9.86
Utility	26093.8	6.45	5.57
CEPT-1	28328.0	7.00	
CEPT -2	14164.0	3.50	
Truck Terminal Warehouse	33131.4	8.19	2.69
Road	133897.2	33.09	10.88
Green*	272237.3	67.27	21.12
Subtotal	1230736.5	304.12	100
BPCL Plot-1	445154.2	110	
BPCL Plot-2	242811.4	60	
TOTAL	**1918702.0**	**474.12**	
FACT Road	62078.8	15.34	
GRAND TOTAL	**1980780.8**	**489.46**	
**Additional 10.88% green will develop in the plots*			

Key players

- Indian Petrochemicals Corporation Limited (IPCL), Reliance Industries Limited (RIL) and Oil and Natural Gas Corporation (ONGC) in Gujarat
- Petroleum, Chemical & Petrochemical Investment Region (PCPIR) -a specifically delineated Investment Region being developed in n Andhra Pradesh, Gujarat, Odisha and Tamil Nadu



Project Parameters

01 Capacity

Admin Building & technical centre; Contract R&D lab; Water Works; Common Effluent Treatment Plants; Electric Substations; Truck Terminals

02 Land

481.79 Acres in FACT premises

03 Raw Material and Utilities

Raw material: The petrochemical feed stock available by expansion of M/s BPCL during 2019-2022 are Propylene, ISO butylene, Toluene, Butene, Benzene, Acrylic Acid, N/I-Butanol, 2-Ethyl Hexanol, 2-Ethyl Hexyl Acryate and by the year 2022 feed stock like Propylene Glycol, Mono Ethylene Glycol and Super Absorbent Polymer (SAP).

Power: A 220 KV electric substation is located at Brahmapuram with a radial distance of 0.8 km from the centre of the project sites and another 220/110 KV electric substation is located at FACT premises. A 66 KV HT line also passes the site boundary.

Fuel: Availability of Natural Gas through pipelines

Water: A 45 MLD Water Treatment plant is being constructed in the project region. There is a 6.5 MLD WTP at KINFRA Export Promotion Industrial Park to meet the initial demand, water can be tapped from the existing source which is at a distance of 5 km from project site

04 Project Cost

Land cost -INR 1,264 crore | Project cost -INR 600 crore

Total cost of the project is INR 1864 crore

05 Means of Finance

Kerala Infrastructure Investment Fund Board (KIIFB) will be funding the entire INR 1,864 crore

06 Common Infrastructure Facilities

Administration building and technical center

Contract R&D lab

Water Works (For water treatment plant/Overhead tank)

Common Effluent Treatment Plants

Electric substations(Main receiving substation and zonal substation)

Truck terminals and warehouses

Market Landscape

- Petrochemicals are considered as enablers for growth of other sectors of the society. They are derived from various chemical compounds, mainly hydrocarbons. These hydrocarbons are derived from crude oil and natural gas.
- The basic petrochemicals are synthetic fibres, polymers, elastomers, synthetic detergent intermediates, performance plastics, fibre intermediates, olefins and aromatics
- Deepak Petrochemicals, Kothari Petrochemicals, Hindustan Organic Chemicals, Mareena Chemicals and SK Global Chemicals are few of the players operating in this space
- With the emphasis on 'Make in India' and the many investor summits organized by different states, the interest in this sector is brimming
- BPCL Cochin refinery completed a major capacity expansion from 9.5 MMTPA to 16.5 MMTPA. This expansion would lead to production of 500000 TPA.

Investment Opportunity

The proposed Petrochemicals Park offers facilities like Single Window Clearance facility, complete eco-friendly infrastructure, shared common infrastructure facilities and land in parcels and built up spaces available for establishment of units on lease basis. The Department of Chemicals and Petrochemicals, GoI, has also launched some schemes to promote this sector like 'Setting up of centres for Excellence in Petrochemicals Sector'. This Petrochemicals Park will create more employment in the state and would accommodate about 20 small and medium scale companies. This state of the art facility welcomes all investment opportunities to develop their industries here and reap the benefits of it. The proposed petrochemical park is poised to play a key role in bridging the demand supply gap of chemicals in South India. This proposal assumes significance in view of expansion plans of BPCL.

Propylene Oxide/ Polyol Petrochemical Plant

Star Project

Manufacturing

BPCL Kochi Refinery Ernakulam

INR 5,000 Cr USD 714 Mn

NH 49, NH 66 NH 544, NH 85

Ernakulam Junction (ERS) Ernakulam Town (ERN) Tripunittura (TRTR)

Cochin International Airport

Cochin Port

Total Propylene Oxide Installed Capacity (India)

36000 MT (2016-17)

Total PO Consumption (India)

52000 MT (2016-17)

Overview

The proposed project is for developing a Propylene Oxide (PO) manufacturing plant of 2,00,000 MPA capacity required to produce Propylene Glycol & Polyether Polyols at Kochi, in the vicinity of existing BPCL Kochi Refinery.

PO is a highly reactive versatile compound which has major application in production of Polyether Polyols (70%) for use in making Flexible, Rigid foams, Non-foam applications, Glycol Ethers (15%) & Propylene Glycol (15%). Flexible foams are used in mattresses, cushions etc. Rigid foams are used in automotive applications, Building Insulation. Propylene Glycol is used in manufacture of Unsaturated Polyester Resin that finds application in the production of Fibre glass reinforced plastic. Endowed with an excellent port infrastructure with ICTT, bulk cargo terminal, oil terminal and airport connectivity, Kochi is an ideal location for the project. The proposed location makes integration of feedstock supply, utilities, off-sites and other general facilities easy.

8%

Projected CAGR of PO market growth in India over 2016- 2025

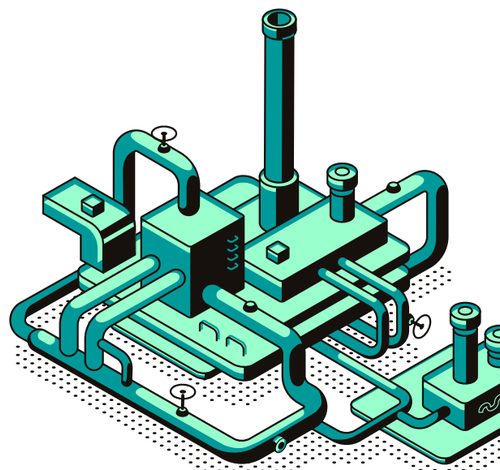
India imported nearly 230264 MT of PO worth INR 217 Cr in 2016-17

Demand and Supply Gap

- India has a PO capacity utilization of 81%.
- Due to high Freight costs for importing PO the advantage of having domestic productionis necessary to support Polyol production.
- In India, PO demand will be driven by the growth in industry applications such as bedding, mattresses, automobiles, etc.
- Polyol consumption is expected to grow at an annual rate of 11 % CAGR over the next 5 years.

Key Players

- Manali Petrochemicals Limited, Chennai
  (Polyol-75,000 TPA, Propylene Oxide -36,000 TPA) (Plans to invest INR 100 Cr to increase Polyol capacity by 50,000 TPA)
- India Glycols
  (Methylene glycols -175,000MTPA, glycol ethers and acetates -70,000MTPA)
- Huntsman India
  (Araldite® resins and Aradur® hardeners -30,000 MTA)
- Expanded Polymer Systems
  (polyether polyol -16,250 MT/Annum, aliphatic polyester polyols -300 MT/Annum, aromatic polyester polyols -3,000 MT/Annum)



Project Parameters

01 Capacity

2,00,000 TPA (PO/Polyol/PG & Utilities)

02 Land

180 acres

03 Raw Material and Utilities

Raw Materials: Propylene Oxide and Ethylene Oxide. Other raw materials required are glycerin, sorbitol, glycols, and pyrophosphate.

Recirculating Cooling Water: 40,000 m^3/ hr.

Pumps, Heat Exchangers, Reactors, Adsorber, Distillation column components, storage tank, flash

04 Employment Potential

Over 3,000 people

05 Licensors for PO Plant

M/s Evonik

M/s Sumitomo Chemical

M/s Himtech Engineering

06 Project Cost

INR 5,000 Crore (USD 714 Mn)

Market Landscape

- PO capacity addition in Middle East, Korea & Singapore will result in increase of imports to India.
- PO is projected to dominate global Propylene market, supported by tremendous growth in the production of light commercial vehicles and packaging industries.
- BASF SE, China National Petroleum Corp. (CNPC), Enterprise Products Partners L.P., Exxon Mobil Corp., Formosa Plastics Group (FPG), Lyondell Basell Industries AF S.C.A., Reliance Industries Ltd., Royal Dutch Shell PLC, Saudi Basic Industries Corp. (SABIC), The Dow Chemical Company, Total S.A., Valero Energy Corp. are some of the leading producers of Propylene.

**Indicative positioning of land*

Investment Opportunity

Strong demand for PO in India by various end user industries, booming automotive, FMCG and furniture sectors, increasing discretionary income and rapid industrialization are expected to drive the PO market during 2016-2025. Moreover, Government of India launched the Automotive Mission Plan 2016-2026 with an aim to increase the contribution of automotive sector in the country's GDP to 12% by the end of 2026. Various technology partnership opportunities can be worked out to develop this plant in Kerala as PO market will grow swiftly.

PVC Manufacturing Plant

Star Project

Manufacturing

BPCL Kochi Refinery Ernakulam

INR 3,000 Cr USD 428 Mn

NH 49, NH 66 NH 85, NH 544

Ernakulam Junction (ERS) Ernakulam Town (ERN) Tripunittura (TRTR)

Cochin International Airport

Cochin Port

Total PVC Production of India (2017-18)

14.61 Lakh MTPA

Annual demand growth for PVC in the next 5 years and is expected to cross

5 million tons in 2020

Overview

The proposed project is to set up a PVC manufacturing facility of capacity 150,000 TPA. Polyvinyl chloride (PVC) is the world's third largest plastic in production and consumption. PVC is combined with additives and fabricated into a wide variety of forms such as pipes and fittings, profiles and tubes, windows and doors, sidings, wires and cables, film and sheets, toys and other moulded products and floorings. Durability, self-extinguishing property, resistance to most chemicals and oil, mechanical strength and ease of processing, makes PVC a competitive and attractive option for many end uses in construction and infrastructure, agriculture, electrical products and healthcare. Endowed with an excellent port infrastructure with ICTT, bulk cargo terminal, oil terminal and airport connectivity, Kochi is an ideal location for the project.

13%

Annual demand growth for PVC in the next 5 years and is expected to cross 5 million tons in 2020.

50%

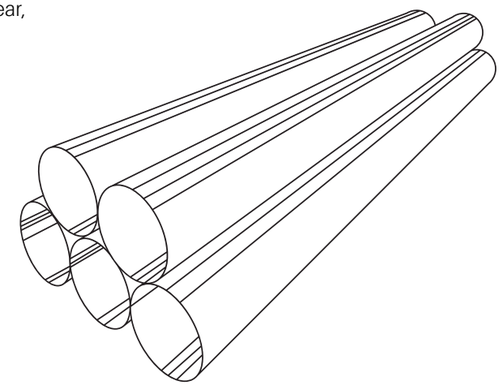
PVC imports in India are now at almost 50 percent and expected to reach USD 3 billion in few years

Key sectors driving demand – Agriculture, Infrastructure and Housing

- PVC demand in India shall be largely driven by sectors such as Agriculture.
- Infrastructure (rural water and sanitation infrastructure, smart cities will boost to PVC consumption).
- Housing (pipes, doors & windows, conduits, wires & cables).
- Potential for PVC in the building and construction sector is over 700 KTPA.

KEY PLAYERS

- Reliance Industries Limited
  (Dahej -3,15,000 tonnes/year, Hazira –360,000 tonnes/year, Vadodara –80,000 tonnes/year)
- Chemplast Sanmar (2,92,000 TPA)
- DCW group (90,000 TPA)
- Finolex (PVC-U Pipes -2,50,000 MTPA, PVC Resin -2,72,000 MTPA5



Project Parameters

01 Capacity

1,50,000 MTPA

02 Land

80 acres

03 Raw Material and Utilities

Raw Material: PVC Resin, Stabilizer, Lubricants, Fillers.

Water: 1000 KL/year.

Ethylene: 75000 TPA. Ethylene can be made available from BPCL-Kochi Refinery, which is the raw material for production for VCM and VCM is the raw material for PVC.

Chlorine: Chlorine which is a by-product of Travancore Cochin Chemicals Ltd., Kochi and can be procured from them.

04 Licensors for PVC Plant

M/s Arkema

M/s JNC

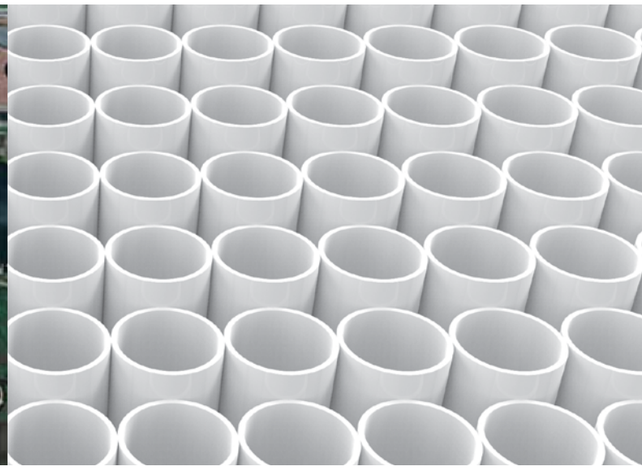
M/s Kemone

05 Cost of the project

INR 3000 Cr (USD 428 million)

Market landscape

- The key demand factors of PVC are recyclable, less energy intensive and having longer life. PVC has packaging as well as other applications in the FMCG, pharmaceutical and retail segments.
- Well established abroad and with increasing urbanization, changing lifestyles, new technologies in construction and other factors, investments in these sectors are expected in the future.
- Per capita PVC consumption in India is only 2 kg as compared to China's 10 kg. PVC industries are essential to the growth of the economy with the product finding applications in variety of sectors as well as being a source of employment.
- Approximately 50% of the demand for PVC in the country is met by imports.



**Indicative positioning of land*

Investment Opportunity

Very little capacity expansion is seen in countries which are currently exporting to India, meaning that there is an upper threshold beyond which these countries cannot supply. There could be a case in the future where demand for PVC in India could possibly outstrip supply. This would lead to processed PVC products not being available for use as well as a lot of downstream processing facilities having poor capacity utilization levels. Other PVC manufacturing players in India are targeting to fulfil these opportunities and capture market share in this space. This project is envisaged to come up under the "Petrochemical Park" project coming up near the refinery. The proposed park is key to bridging demand-supply gap of chemicals in South India.

Super Absorbent Polymer Plant

Star Project

Manufacturing

BPCL -Kochi Refinery

INR 900 Cr
USD 128 Mn

NH 66
NH 85
NH 544

Ernakulam Junction (ERS)
Ernakulam Town (ERN)

Cochin International Airport

Cochin Port

The global SAP market has been forecast to grow at 7.3% during 2016-2022, reaching USD 65 billion by 2025.

SAP demand is expected to grow by 10-12% CAGR to reach nearly 145 KTPA by 2020-21

Overview

Demand for Super Absorbent Polymer Plant (SAP) is driven by diapers, feminine hygiene products, medical and the agriculture industry. The project plans to set-up a manufacturing unit of Superabsorbent Polymer of 60,000 TPA capacity. Endowed with an excellent port infrastructure with ICTT, bulk cargo terminal, oil terminal and airport connectivity, Kochi is an ideal location for the project. This project will be the very first endeavour to supply local demand of SAP as most of the products are being imported now. The proposed location in the vicinity of refinery makes easy the integration of feedstock supply, utilities, off-sites and other general facilities with the refinery.

USD 39.5 Bn (2015)
USD 65 Bn (2022)

The global SAP market has been forecast to grow at 7.3% during 2016- 2022, reaching USD 65 billion by 2025 *(Source: Global Superabsorbent Polymer Market 2016-2020)*

- Diapers market segment is expected to grown at 5.1% CAGR over 2019-2023.
- Feminine hygiene segment is expected to grown at 4.2% CAGR over 2019-2023.
- SAP demand is expected to grow by 10-12% CAGR to reach nearly 145 KTPA by 2020-21.

Key players

- Dow Chemicals
- BASF
- Nippon Shokubai
- San Dia Polymers
- LG Chemicals
- Evonik
- Minor Chinese players

The major players have inbuilt R&D centres focusing on product innovation and efficiency and on environmental impact.

Project Parameters

01 Capacity

60,000 TPA

02 Land

20 Acres

03 Raw Material and Utilities

Acrylic Acid and Acrylamide. The requirement of raw material is estimate at 10,000 MT/ year of acrylic acid and 130 MT/year of Acrylamide. Post commissioning of BPCL's plants, domestic availability of acrylate and butanol is expected to rise. The petrochemical complex of BPCL-Kochi Refinery is expected to produce 47,000 TPA of Ester grade Acrylic Acid.

04 Employment Potential

Direct-500 to1000, Indirect-Upto 2000

05 Expected Turnover

Estimated revenue/year INR 290 Crore (USD 41 Mn) (assuming 30% plant production capacity in Year 1)

06 Licensors for the SAP Plant

M/s Evonik

M/s Yixing Danson Technology

M/s SANYO Chemical

07 Project Cost

INR 900 Crore (USD128Mn)

08 Means of Finance

Project is expected to come up in JV mode, the JV partner providing the License/Equity and ensuring marketing of SAP to end-users

Market Landscape

- There are no domestic suppliers for Super Absorbent Polymer in India.
- SAP demand is met entirely through imports.
- SAP is most commonly used in feminine hygiene products & diapers, both adult and baby. The market for diaper is the largest application for superabsorbent polymers. The demand is increasing, with a focus on rural markets with regard to female hygiene products.
- Large players for SAP have inbuilt research and development centre. Companies are procuring SAP with highly absorbent cores and reducing the weight of bulkier materials such as fluff pulp. Such applications will drive innovation in SAP manufacturing and processing.
- SAP is used in agriculture for drip irrigation techniques which reduces water loss leading to irrigation frequency reduction by 50%.
- SAP is used in medical products including traditional and advanced wound care products such as bandages and surgical pads. The polymer helps absorb exudates and liquids, leaving the wound dry, preventing itching and promoting quick recovery of the wound.
- SAP has applications in soil management practices for locations characterised by severe water stress. The application of SAP could conserve soil water.

*Indicative positioning of land

Investment Opportunity

The synthesis of superabsorbent polymers is done through gel polymerisation, copolymer synthesis, suspension polymerisation and solution polymerisation. Opportunities lie in the import of such technologies. Major end-users for SAP are key multinationals like Procter & Gamble, Kimberly-Clark, Unicharm and Johnson & Johnson. Hence, opportunities for SAP application provide a large potential market for the proposed plant at Cochin to capture.

The Make in India sector policy offers various incentives for research and development, green technology and practices for potential investors.

Multi-Modal Logistics Park

☆☆☆ Star Project	Infrastructure	Kochi, Ernakulam	INR 1,500 Cr USD 214 Mn
NH 66 NH 85 NH 544	Ernakulam Junction (ERS) Ernakulam Town (ERN)	Cochin International Airport	Cochin Port

OVERVIEW

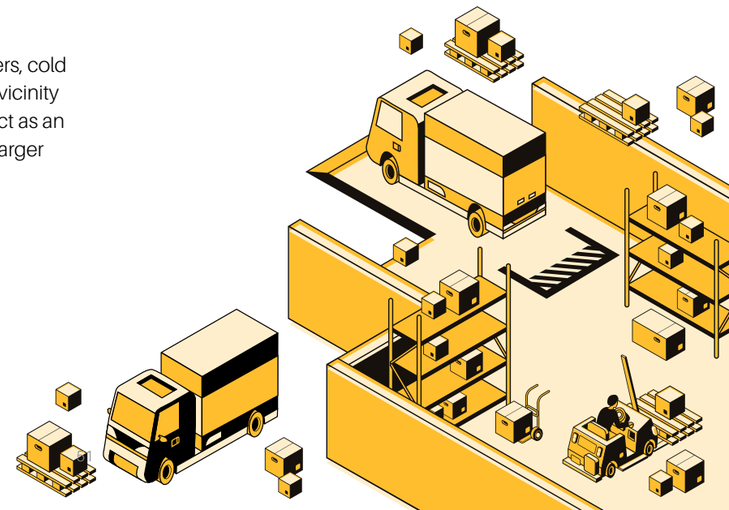
A Multi-modal Logistics Park (MMLP) including Free Trade Warehousing Zone (FTWZ) is proposed to be set up in the vicinity of Cochin Port. Cochin Port Trust (CPT) intends to establish this project in conjunction with the existing port facilities and services under the Logistics Efficiency Enhancement Program (LEEP) of the Ministry of Road Transport and Highways (MORTH). Under LEEP, there are also plans to construct Inter-Modal Stations which integrate various transportation modes. The objective of this project is to provide efficient integrated logistics services with dedicated areas in the MMLP which would enable freight aggregation, distribution and multi-modal freight movement by providing services such as Warehouse, Cold Storage, and other value-added services. The MMLP is poised to address the issues of an unfavourable modal mix, inefficient fleet mix and under-developed material handling infrastructure. The proposed MMLP is composed of sub-projects - General Warehouse, Cold Storage, Container Freight Station (CFS). In addition to these, a Free Trade Warehousing Zones (FTWZ) is also proposed to be set up in juncture with the MMLP. The FTWZs would improve the logistics infrastructure of the state and facilitate and promote cross-border and international trade. The primary intent of FTWZ is to attract industries catering to goods/cargo operations for locating in the Parks.

Cochin Port Trust

- In 2016-17, CPT had achieved the highest growth in operating surplus and the third highest growth in cargo traffic across all major ports of India
- In 2017-18, a total of 1,555 vessels including freight, tankers, and cruises entered the Cochin port
- The busy port handled more than 5.5 lakh containers (TEU) and over 7.6 MMT of cargo in 2017-18; surpassing the Shipping Ministry's traffic target making it a strong candidate for MLP and FTWZ
- Cochin Port has leveraged its strategic location at the cross roads of trade between East and West to establish India's first International Container Transhipment Terminal (ICTT)
- Cochin Port ICTT has registered a whopping growth of 17.5 per cent in total traffic handled in 2016, hence the container capacity is slated to increase in a phased manner up to 30 lakhs TEUs/year.

Key players

There are several private logistics service providers, cold storage, and warehouse service providers in the vicinity of Cochin port trust. The proposed MMLP shall act as an incentive for all existing players to be part of the larger ecosystem.



Project Parameters

01 Capacity

Warehouse Capacity: 7,00,000 Cu. Ft (First Phase)

Cold Storage Capacity: 30000 Sq.ft with capacity of 80000 tonnes per annum (First Phase)

CFS Capacity: Installed capacity to handle 100 Containers per day (36000/ year)

FTWZ: 100000 Sq. m

02 Land

100 Acres

03 Raw Material and Utilities

Power Requirement: 1000 KVA

Ware house and Cold storage-Fork Lifts etc.

CFS facility: 2 Reach Stackers (to lift 45 tons and stack 1+4 Containers)

Handling empty Container : 3 forklifts

04 Employment Potential

Direct -60

Loading/Unloading & Security -125

05 Expected Turnover

Expected Revenue is in the tune of INR 20 Crore after completion of first phase

06 Project Cost

INR 1,500 Crore (USD 214 Mn)

Est. 1stphase Cost: INR 80 Crore (USD 11.4 Mn)

07 Means of Finance

Promoters contribution –INR 600 Crore and Term Loan/Private investment in tune of INR 900 Crore

SEZ units (FTWZ) can have external commercial borrowing up to USD 500 million in a year without any maturity restriction through recognized banking channels.

Market Landscape

- The Ministry of Shipping has identified fourteen Coastal Economic Zones (CEZ) along the coastline of the country under National Perspective Plan (NPP) of Sagarmala Program. Sagarmala project aims to invest INR 70,000 crore in facilitating economic growth by enhancing coastal shipping of goods.
- Connectivity for all mainline carriers on the East-West shipping routes and regular scheduled train services to Inland Container Depots (ICDs) located in Irugur (Coimbatore) and Whitefield (Bengaluru) are catalysts for the impressive growth.
- With the arrival of the first Roll On – Roll Off (Ro-Ro) car ship in 2016, which connects automobile production hubs in Tamil Nadu (east coast) and Gujarat and Haryana (west coast), Cochin Port attracts various new businesses. 50 ship calls a year with 1,000 cars per call will be required if 30 per cent of the Kerala market shifts to the coastal transport mode.
- Inaugurated in February 2017, Vizag Multi-Modal Logistics Park boosts movement of container cargo and other cargo from the east coast port city.
- Government plans to develop 35 MMLPs in India. Cochin is one of the identified locations and with the upcoming MMLP.

*Indicative positioning of land

Investment Opportunity

The MMLP project shall be supported by the government for land acquisition. Different operation models like profit sharing, fixed monthly lease rent system etc. with land owners can be worked out. Central Government assistance through the Logistic Efficiency Enhancement Program (LEEP) of Ministry of Road Transport & Highways (MoRTH), will also be explored. The LEEP aims at enhancing freight transportation across the country through infrastructure, procedural and IT interventions. The government is also working to formulate a uniform policy for the development of MMLPs.

100 per cent FDI is permitted to develop FTWZ. Several countries are expressing their interest in the upcoming FTWZ in order to foster their trade relations with India as they can import goods duty-free and warehouse it in the FTWZ, they can re-export these goods without paying duty.

Integrated Manufacturing Cluster (IMC)

Star Project

Infrastructure

Cochin to Palakkad

INR 10000 Cr
USD 1428 Mn

NH 47, NH 66
NH 544, NH 966

Ernakulam Junction (ERS)
Ernakulam Town (ERN)
Palakkad Junction (PGT)
Thrissur (TCR)
Shoranur Junction (SRR)

Cochin International Airport

Cochin Port

29 Formally Approved SEZs in Kerala

25 Notified SEZs in Kerala

11.7% CAGR GSVA (Constant) Growth Rate of Manufacturing Sector in Kerala

9.2% GSVA Growth of Kerala's Manufacturing Sector in 2017-18

Overview

It is proposed to establish an Integrated Manufacturing Cluster (IMC) in the proposed Kochi-Bengaluru Industrial Corridor from Kochi to Palakkad. The project aims to facilitate investment, foster innovation, enhance skill development, and build best-in-class manufacturing infrastructure. The proposed industrial corridor passes through Palakkad and Coimbatore to link with the Chennai-Bengaluru industrial corridor. The length of the corridor in Kerala would be nearly 160 Km. the IMC that will come along the Corridor will boost the manufacturing activities including Electronics, IT, Biotechnology, Life Sciences, etc. in the districts of Ernakulam, Thrissur, Malappuram and Palakkad.

The clusters shall be equipped with world-class infrastructure, road and rail connectivity for freight movement to and from ports and logistics hubs, served by reliable power and quality social infrastructure. They will provide a globally competitive environment conducive for businesses. The Kochi Bengaluru Industrial Corridor proposes to address the infrastructure bottlenecks through a holistic approach while benefiting from the inherent strengths and competitiveness of each of the KBIC states. Accordingly, high impact/ market driven integrated manufacturing clusters are proposed to be developed, at strategic locations, within the corridor to provide transparent and investment friendly facility regimes.

Such a cluster concept will enable the R&D resources already existing at Trivandrum to be optimally used, to generate more project and business ideas, setting off more virtuous circles. Industry-specific clusters will be set up under central schemes like the Electronic Manufacturing Cluster Scheme of the Department of Electronics & IT and the Modified Industrial Infrastructure Upgradation Scheme of Ministry of Commerce & Industry. The Central Government is preparing a National Plan for Manufacturing Clusters. The Plan aims to bring about convergence in the development of industrial areas by the central and state governments to bring about optimal utilisation of resources.

6,890
Factories Operating in Kerala employ 3.39 Lakh people (2015-16)

INR 15,970 Cr
Contribution of Net Value Added in Manufacturing Sector (2015-16)

INR 38,442 Cr
Fixed Capital invested in factories in Kerala (2015-16)

INR 1,22,691Cr
Total Output of all factories in Kerala (2015-16)

Data from 2015-16 as per Annual Survey of Industries, Government of India on organised manufacturing sector.

India's manufacturing sector has emerged as one of the high growth sectors with the potential to touch USD 1 trillion by 2025 and create up to 90 million domestic jobs.

Setting up of Industrial projects in Kerala has become a hassle free operation since the Government of Kerala has introduced the Single Window Clearance System with a Common Application Form for the State.

Key players

- Manufacturing Clusters in Chennai
- Integrated MSME Clusters in Tamil Nadu
- Visakhapatnam Chennai Industrial Corridor
- Manufacturing Clusters in Hyderabad

Project Parameters

01 Land

Around 1000 acres of land in the possession of central and state PSUs in the region remains unutilized. A 50 kms band with NH 544 as the spine and a length of 160 kms has been proposed within the State for establishing the Industrial Corridor.

Another 2000 acres of land can be acquired along the corridor region. This will be in different nodes of 50 to 500 acres, situated on either side of NH-66.

02 Raw Material and Utilities

Infrastructure augmentation, Power Supply, Industrial Grade Water Supply, Solid Waste Management services by ULBs, Connecting roads

03 Employment Potential

1 Lakh Direct employment

3 Lakh Indirect employment

04 Project Cost

Over INR 10,000 Crore (USD 1,428 mn)

05 Means of Finance

The project is proposed to be implemented in PPP mode on DBFOT basis. Government of Kerala will provide the land required for establishing the Cluster. An SPV will be formed involving Government agencies like KSIDC, KINFRA, DIC, etc. to this extent. Land will be the equity of Government of Kerala in the project. All necessary clearances will also be facilitated by the Government.

Suggested particulars under means of finance are as follows:

- Government Grant – 30%
- Equity from Government Agencies and from constituent units – 40%
- Term Loan – 30%

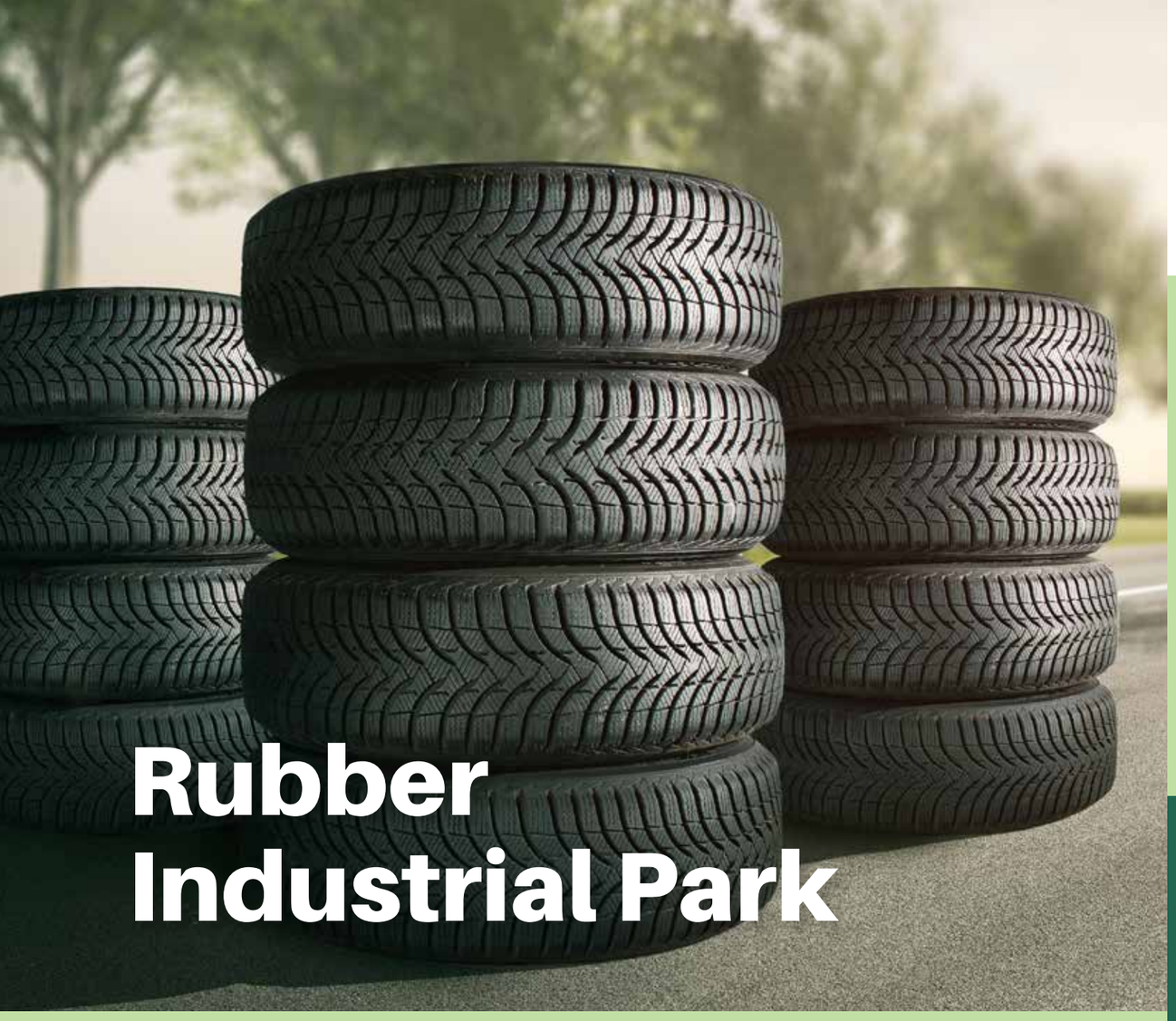
Market Landscape

- The Kochi Bangalore Industrial Corridor seeks to optimise the economic and employment potential, stimulating investments in manufacturing, agro - processing, services and export-oriented units. This promotes the overall economic development of the area through the creation of high standard infrastructure and enables pro- business environment
- India has become one of the most attractive destinations for investments in the manufacturing sector. Demand growth, supply advantages, and policy support have been instrumental in attracting FDI. India has grown as a global manufacturing hub due to its cost competitiveness, trained labor and due to the positive government plans. The central government has proposed various initiatives to give a push to the Make in India campaign, and the National Investment and Manufacturing Zone (NIMZ). Once the NIMZ becomes a reality, it is estimated to attract investments to the tune of INR 4,37,000 crore, generate jobs for 3 lakh people and earn foreign exchange to the tune of INR 24,000 crore
- With the onset of Sagarmala Program, many ports including ports in Kerala have been identified across port modernisation & new port development, port connectivity enhancement, port- linked industrialisation and coastal community development for phase wise implementation over the period 2015 to 2035.

*Indicative positioning of land

Investment Opportunity

By introducing a cluster-based approach in the state, Kerala can further strengthen the competitiveness of the sectors through leveraging the economies of scale. The state government of Kerala supports for land acquisition and also facilitates all necessary clearances. An SPV will be formed involving Government agencies like KSIDC, KINFRA, DIC.



Rubber Industrial Park

- Star Project
- Manufacturing
- Kanjirappilly, Kottayam
- INR 6 Cr Initial Investment
- NH 183
- Kottayam (KTYM) Changanassery (CGY)
- Cochin International Airport
- Cochin Port

691 Thousand Tonnes

Total production of Natural Rubber in India (2016-17)

1,044 Thousand Tonnes

Total consumption of Natural Rubber in India (2016-17)

Overview

A rubber industrial park is proposed to promote Natural Rubber value chain in Kerala covering upstream, midstream and downstream segments with a view to enhance efficiency at different stages and promote value addition and ultimately benefit all stakeholders, especially rubber smallholders. Natural rubber (NR) is a critical and strategic industrial raw material and products range of NR covers more than 50,000 items, which are widely used and indispensable for modern life. A PPP model was proposed for the same. At a later stage when private investors and stakeholders have been identified and the preparatory works of the company are completed, the government may disinvest up to 74%, as per the G.O. At the time of disinvestment, the shares from initial subscribers may be transferred to the private shareholders.

8.2%

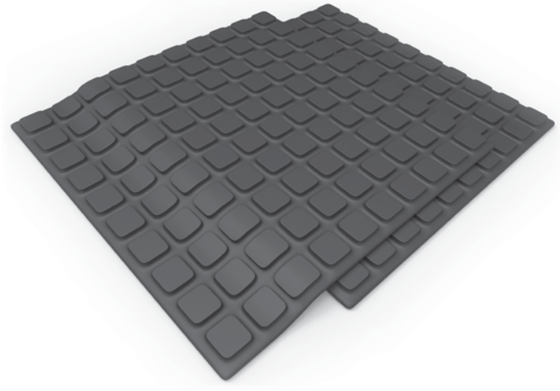
India continues to be the second largest consumer of Natural Rubber with a relative share of 8.2% in world consumption.

India is the **sixth largest producer** of Natural Rubber with a share of **5.0%** in world production in 2016

The consumption of natural rubber, touched a record high of 10.2 lakh tonnes in the period of April'18-January'19 *(Source: Rubber Board)*

Demand-Supply Gap

- The present domestic natural production is capable of satisfying only 55 percent of total natural rubber consumption in the country. This gap in demand and supply has increased the dependence on imports for consuming industries
- Natural Rubber consumption in India is likely to surpass the projection of 12 lakh tonne made by the Rubber Board for the year 2018-19
- Per capita consumption of Rubber in India is approx. 990 gm against 9-16 kgs globally (USA, Europe etc.). foreseeing wide development prospects for the sector in the future



Project Parameters

01 Facilities

The basic infrastructure facilities are available at the site and the land can be developed with all required infrastructure facilities.

02 Land

KINFRA / KSIDC has already identified 200 acres of suitable land at Kanjirapilly Taluk for the project. The proposed site is 3 KM away from Kanjirapilly town and on side of Thampalakkad road.

03 Project Cost

Authorized capital at the time of incorporation: Fixed as INR 5 Crore

Subscribed capital: Fixed at INR 1 Crore.

Market Landscape

- Natural rubber is a critical and strategic industrial raw material and will remain so in the foreseeable future.
- Natural Rubber is a major contributor to agricultural economy of Kerala. Kerala's Rubber production of 539,000 tonne forms 78% of total production of the country and contributes to more than INR 7,000 Crore per annum economic worth. Consumption of NR in Kerala in 2016-17 was approximately 130,000 tonne.
- Rapidly increasing demand from the automotive industry and rise in the application of rubber products in the end use industryare the key drivers of the industrial rubber product market.
- Future prospects of autonomous and battery vehicles is apparently anticipated to propel the demand for industrial rubber products in the future.
- Value addition include production of intermediate and final rubber products. There are numerous rubber products being used in transport, health, industrial, sports, household, entertainment and other sectors.
- Globally around 70% of rubber is used in vehicle industry as tyres and other parts.
- India had exported rubber products worth INR 18,792 Crore in 2016-17. Tyres and inner tubes formed more than half of the export. Other major products excluding tyres include plates, sheets and strips, tubes, pipes and hoses, belts and beltings, contraceptives, gloves, floor coverings and mats, gaskets, washes and other seals.

Investment Opportunity

Kerala's topography and climate are best-suited for rubber cultivation and has helped the state to emerge as the home of Indian natural rubber. The global industrial rubber products market is expanding at a progressive rate, driven by the increasing demand from automotive, manufacturing and construction industries. This pioneering venture focuses on cashing in on the booming market in India and globally for rubber products and is expected to uplift the region into an attractive manufacturing destination for Natural Rubber. The project involves the development a Rubber park hub to promote the value addition of Natural Rubber in Kerala, as well as to support the development of qualitative infrastructure. The global rubber industry is on the threshold of a take off into more innovative products, applications and processing and prospects of new technologies like nano technology in rubber goodsis high. Hence this park has wide prospects for R&D.

Cryogenic Warehouse

Star Project

Infrastructure

Puthuvypeen, Cochin Port

INR 300 Cr USD 42.8 Mn

NH 66
NH 85
NH 544

Ernakulam Junction (ERS)
Ernakulam Town (ERN)

Cochin International Airport

Cochin Port

200 MN Tonnes
Amount of perishable foods that could be preserved if developing countries had same level of cold chain as in the developed world

INR 952 Billion
Size of Indian Cold Chain Market in 2017

Overview

The proposed project is to establish a Cryogenic Warehouse at an area of 10 acres in Puthuvypeen next to the existing LNG terminal. The project has been earmarked using the cold energy available from the regasification process that can be used for creation of a zero CO2 emission cold-chain hub. Cryogenic Warehousing proposed is basically for perishable products like vegetables, meat, and fish and also for pharma products. The terminal area is situated in the Special Economic Zone (SEZ) of Puthuvypeen near the entrance to Cochin Port.

Recycling of waste cold energy from LNG re-gasification to help produce the cryogenic air or nitrogen would serve as an energy vector to displace fossil fuels in cooling would produce value for the LNG terminal operators (value from waste re-cycling), cryogen producers (increased sales), fleet operators (lower costs) and society (reduced CO2, NOx and PM emissions, health/social costs, post-harvest food and associated losses, infrastructure costs).

15.4%
Projected CAGR of Indian Cold Chain market during the period 2018- 2023

Shortage of refrigerated vehicles is on a rise in India; India requires 17,000 additional refrigerated vehicles to meet demand

Cold energy from projected Indian LNG imports in 2022 could in principle help produce enough liquid air to fuel half a million liquid air refrigeration units

Cold Storage Industry in Kerala

- Ministry of Shipping and the Ministry of Agriculture are spear heading a project to set up cold chain hubs at Ports with LNG terminals like Cochin Port, so they could be developed as Perishable Handling Centres and Perishable Port Gateways.
- The facility can be used as a port based cold store hub for the entire Kerala region. The Cochin LNG terminal is expected to run at 40 per cent capacity by 2019 which shall ensure a continuous generation of waste cold for the proposed warehouse.

Project Parameters

01 Capacity

5 million cubic meters

02 Land

10 acres in Puthuvypeen, Ernakulam next to the LNG terminal

03 Raw Material and Utilities

A typical LNG terminal re-gasifying 7100 tons of LNG/day can produce 2,600 tons of liquid nitrogen, enough to provide the cooling for almost 1,100 chilled and frozen refrigerated trucks operating around the clock and peak time cooling (three hours a day) for 7.5 million cubic meters of chilled and frozen buildings.
(Source: Study by E4tech, conducted on behalf of NCCD)

04 Project Cost

INR 300 Crore (USD 42.8 Mn)

05 Means of Finance

Various means of finance and support available form Government of India :

- Access to low interest fund of Rs.5, 000 crores from WIF from the National Centre for Cold Chain Development under the Ministry of Agriculture
- Access to National Clean Energy Fund
- Credit linked subsidy at 35% (up to 50%) for cold chain infrastructure
- Investment linked 150% tax deduction
- Automatic route clearance for 100% FDI with External Commercial Borrowings route open

Market Landscape

- Cochin Port has a 5 MMTPA LNG terminal and Regasification Plant owned by the Petronet LNG Ltd. 10 acres of land adjoining the LNG terminal in Puthuvypeen Port Based SEZ is earmarked for setting up the cold storage on PPP basis
- Cryogenic Warehousing is for perishable products like vegetables, meat, and fish and also for pharma products. The terminal area is situated in the Special Economic Zone (SEZ) of Puthuvypeen near the entrance to Cochin Port
- Recycling of waste cold from LNG re-gasification to help produce the cryogenic air or nitrogen would serve as an energy vector to displace fossil fuels in cooling would produce value for the LNG terminal operators (value from waste re-cycling), cryogen producers (increased sales), fleet operators (lower costs) and society (reduced CO2, NOx and PM emissions, health/social costs, post-harvest food and associated losses, infrastructure costs).
- Each tonne of LNG contains the cold energy equivalent of 240kWh, quite apart from the chemical energy contained in its methane molecules, and typically 80% of this cold energy is thrown away.
- The proposed project can utilise this cold energy by recycling it through a co-located air liquefaction plant to help produce liquid air or at around -196C.
- Petronet LNG recently has invited Expressions of Interest from players to help it develop an integrated cold store facility at its LNG import terminal at Dahej, Gujarat as well. Since the application of the technology is at a nascent stage and with increased focus on environment this field is poised to gain significant competition from cryogenic technology providers, logistics providers etc.
- Sainsbury in the UK has become the first company in the world to introduce a refrigerated delivery truck cooled by a liquid nitrogen powered engine
- Unlike other alternative refrigeration technologies, liquid air can cater to full range of cold chain services - from pre- cooling of produce to warehouse cold storage and long distance vehicle refrigeration. It can also supply the cold for blast freezing and other forms of food processing. Liquid air can find applications beyond agriculture like back-up power and air-conditioning in buildings.
- Dearman, a UK-based technology company, has developed a family of engines that uses liquid air/ liquid nitrogen to deliver zero-emission power and cooling.

**Indicative positioning of land*

Investment Opportunity

There is a huge opportunity to utilize the earmarked area on PPP (DBFOT) basis to build and operate cold chain facilities after tying up with PLL for the cold energy. The facility could also be utilized by small and medium food suppliers/producers, marine processing firms etc. The operation of the facility is considered to be far more economical compared to conventional cold storage. National Center for Cold Chain Development is pursuing the potential of clean energy from liquid air based cold chains by recovering stranded cold from LNG re- gasification. The prospect of developing cryogenic warehouse at the Cochin LNG terminal can be developed under this window.

Aerotropolis

Star Project

Infrastructure

Mattannur, Kannur

INR 850 - 1000 Cr
USD 121Mn-143Mn

NH 17
NH 66

Kannur (CAN)
Kannur South (CS)

Kannur International Airport

New Mangalore Port

Kannur has historically been bestowed with the status of the "Town of Export Excellence" by the Central Ministry of Commerce and Trade.

Kannur's GSVA added at current prices added grew at 10.09%and 10.18% respectively in the last two years

Overview

The Aerotropolis consists of an airport city core and outlying corridors and clusters of aviation-linked businesses. The proposed project is in conjunction with the Kannur International airport. The three major components of Kannur Aerotropolis includes

- Traditional Industries : Marine Product Processing, Cashew Processing, Coir Processing, Plywood, Spices, Silk production, Handloom & Textile, Coffee Processing, Handicrafts, Floriculture.
- Induced Industries : Aviation MRO, Aerospace Manufacturing, Aviation Institute, Gems & Jewellery, Logistics (considering airport as the catalyst).
- Real Estate : As a support facility such as Tourism & Hospitality, Medical facilities, Commercial (IT & Non-IT).

With the onset of Kannur airport which was envisioned taking into account the future demand of the passenger traffic of the emigration population from North Kerala and the huge tourist volume in the hinterland, the district has a huge opportunity to be developed as an industrial hub in the state.

The concept of Aerotropolis is based around airports becoming the anchors for a new type of city that develops around airports rather than on the fringes. In India, there are two such examples – one in West Bengal and other in Telangana.

The proposed Aerotropolis ought to have a vision of leveraging on the existing untapped potential of Kannur and adjoining Kasaragod district in different spectrums like agro processing, marine processing and tourism.

- Kannur has various factors such as fertile soil, salubrious climate, rich forests, enormous fishing potentials, minerals, and existing infrastructural facilities offering ample scope for development of further industries. The Kannur airport is likely to facilitate export trade for the export focused industrial clusters.
- Kannur's GSVA added at current prices added grew at 10.09% and 10.18% respectively in the last two years.
- Kannur region is home to many industrial sectors such as textile, food & agro, wood and paper related etc. Around the airport, Kannur is a major urban node and there is a sea port at Azhikkal. Calicut is also a key urban node which is a key target market.
- Due to dearth of a comprehensive industrial setup in the district, major development is poised to come in with the proposed Aerotropolis.

Project Parameters

01 Land

Industrial park : 612 acres

Airport based SEZ : 300 acres

Real Estate : 55 acres

02 Raw Material and Utilities

Site access road, power (110 KV substation at Kannur airport), water supply (proposed to be sourced from Pazhassi dam)

03 Expected Turnover

The pre-tax IRR is estimated at 16.67%

04 Project Cost

INR 900 Crore (USD128 Mn)

Cost of Land: INR 700 Cr

Land Development Cost: INR 80 Cr

Utilities Cost: INR 70 Cr

Administrative Block: INR 5 Cr

Contingency:INR 8 Cr

Preliminary and Preoperative Expenses: INR 6 Cr

Margin money for Working Capital: INR 1 Cr

Interest during Construction: INR 30 Cr

05 Means of Finance

- Debt-equity ratio of 1.5 : 1 is assumed.
- Considering this as regional/ industrial development project government support may be availed in terms of Grants/VGF etc.

Market Landscape

Andal Aerotropolis, Durgapur, West Bengal

- India's first Aerotropolis located at Andal between the industrial cities of Durgapur and Asansol The Kazi Nazrul Islam International Airport is being developed in association with Singapore's Changi Airports International (CAI) and constructed by Bengal Aerotropolis Projects Limited (BAPL).
- In2007, the Union Civil Aviation Ministry and the West Bengal Government announced plans to setup a new airport along with a township, IT and logistics hub for the Asansol-Durgapur Region.
- The Andal Aerotropolis Project is spread over approximately 2,182 acresin the Asansol Durgapur Planning Area (ADPA) in West Bengal. Bestowed with premium facilities and unparalleled opportunities in the fields of power-intensive industries, mining, iron & steel, metalwork, engineering, petrochemicals, Information Technology (IT) and telecommunications, ADPA has proved to be an ideal destination for investors.

GMR Hyderabad Airport City, Hyderabad

- GMR has been developing Hyderabad Airport City in the precincts of Hyderabad International Airport. The Airport City would offer an integrated ecosystem with theme-based, anchor-led development zones.
- This shall include key ports and establishments, including a Business Port, a Health Port, Education Port, Fun Port, Retail Park, Logistics Park and Aerospace Park, as a multi-product SEZ.
- The Aerotropolis is expected to play a catalytic role in the growth of Telangana's economy. GMR Hyderabad Airport City aims to become an urban conglomeration in South India and its proximity to the airport would open new vistas for international investment.

Investment Opportunity

**Indicative positioning of land*

The proposed Greenfield Aerotropolis in Kannur, is envisaged to be unique development with capability to change the socio-economic scenario of its primary hinterland. With a vision to capitalize the untapped industrial and tourism potential of North Malabar region, the subject project can emerge as a definite winner in creating a large number employment opportunity and making Kannur a 'Destination' of its own.

The feasibility study conducted by INKEL* proposed two development options for the project namely

1. Integrated with development plan of Kannur International airport and bid out on BOT mode.
2. Treated as separated entities, wherein Aerotropolis will be bid out on BOT mode.

Kerala Maritime Cluster

Star Project

Infrastructure

Cochin Port (Wellington Island)

INR 3500 Cr USD 500 Mn

NH 66, NH 85 NH 544, NH 966B

Ernakulam Junction (ERS) Ernakulam Town (ERN) Edapally (IPL)

Cochin International Airport

Cochin Port

25 MTPA

Cargo currently handled by Cochin Port. Liquid Cargo – POL, LNG, and LPG forms the major chunk while other commodities including containers form a small share

41-43 MTPA

Expected cargo traffic handled by Cochin Port by 2025

52-60 MTPA

Expected cargo traffic handled by Cochin Port by 2035

Overview

The maritime gateway to peninsular India, Kochi is the fastest growing logistic centre emerging in to a major International trans-shipment terminal. An all-weather natural Port, and located strategically close to the busiest international sea routes Kochi is promoting a major liquid terminal, bulk terminal and maritime industries in its port based SEZs. Additionally due to its proximity to the maritime highway, it is proposed to set up a Maritime Cluster in Kochi adjoining to the port area.

The scope of this project is to develop and enhance the existing maritime cluster at par with leading international maritime centers and develop a policy guideline for functioning of the maritime cluster. The proposed project consists of development/enhancement of following components of the existing cluster:

Core Services (Shipping and Port related)

International Ship Repair Terminal, Boat Manufacturing & Repair facility, Port Modernization, Ship Management Services

Finance and Regulatory Services

Maritime finance & insurance services

Others – Port led Industrial park, Cruise Tourism, Water sport activities at Marina and Maritime Museum

Maritime Cluster can be broadly defined as a group of organisations, institutions, business and other industry players in the maritime sector that are geographically located close to each other and enjoy positive synergy between their activities. In India, most of the existing maritime clusters have been developed in an un-planned manner which has led to highly fragment maritime industry and sub-optimal growth over the years.

In Kochi the existing cluster consists of Cochin Shipyard - ship repair and ship building facility, container cargo, commodities trading centre, LNG Terminal Jetty, cruise terminal, International Container Transhipment Terminal, Bolgatty Resort, Government bodies like Kerala State Maritime Development Corporation, Kerala State Shipping & Inland Navigation Corporation, private shipyards, and institutes like Kerala Maritime University.

Kerala, especially Kochi, is already an important presence in the maritime field. However, the different stakeholders for the sector are scattered and there is no common link connecting the stakeholders. Because of this reason, the potential of the maritime activity in the state has not been explored fully. The cluster is to be governed by a well-tailored maritime policy to create a common platform for all the stakeholders functioning in and around Cochin Port ranging from manufacturers, logistics, ancillary service providers, universities etc. At present all the stakeholders are scattered and are disconnected. All maritime stakeholders need to be consolidated and streamlined into a well-oiled machinery to reap the maximum reward for the state in the maritime sector.

>9% CAGR

Projected growth rate of India's port infrastructure market during 2016-2025

The expected growth is on account of heavy funding pertaining to development of ports and related infrastructure such as roads, railways and CEZs

0.45%

According to Ministry of Shipping, India accounts for only 0.45% of the global shipbuilding market in 2016 and could target 3–4 MN DWT of the global shipbuilding capacity by 2025.

The proposed cluster is poised to enhance the strength and development of maritime sector and in effect make the port more accessible and competent. Such a proposition shall foster the maritime manufacturing potential of the state and transform the maritime dreams of the state.

The Kerala Coastal Economic Zone (CEZ) under the National Perspective plan of the Sagarmala Program is envisaged to provide a thrust to the traditional stronghold industries in the state which have a significant EXIM orientation and linkages with the port. It aims to provide an impetus to the economy of the state, taking into account the favorable conditions it enjoys both as a location for light manufacturing and as a tourist destination.

Project Parameters

01 Capacity

Port Modernization

- Setting up of fertilizer bagging facility at Kochi port
- Setting up of food grain import terminal at Kochi port
- Setting up of edible oil terminal at Kochi port

International Ship Repair Facility

- Facility for repair of ships of capacity up to 25000 DWT, with Ship Lift System.

Port-led Industrial Cluster

- Ernakulam could be developed as a furniture manufacturing hub and linked to Kochi port for evacuation.
- Modernization of existing boat manufacturing facilities

Cruise Tourism and Marina water sports

- Upgrading infrastructures at Ernakulam Wharf for cruise berthing facilities :
  - Construction of Cruise Terminal building
  - Development of berth and backup area
- Upgradation of existing International Marina with water sports facilities such as Jet Ski, Towables, Bumper boats and Parasail Boats

Maritime Museum

- Enhancement of existing maritime museum to create a Maritime Experiential Museum

02 Land

International Ship Repair Facility: 42 acres of land area and 37 acres of water area is given for lease to Cochin Shipyard Limited

Port-led Industrial Cluster: 180 acres of land is available in proximity of Cochin Port Trust Wellington Island

03 Employment Potential

1 Lakh jobs in next 10 years

04 Project Cost

The total project cost is estimated at: INR 3500 Cr (USD 500 MN)

Port Modernization: INR 200 Cr

International Ship Repair Facility: INR 970 Cr

Port-led Industrial Cluster: INR 2000 Cr Cruise Tourism: INR 20 Cr

Maritime Museum: INR 10 Cr

Marina Watersports activities: INR 20 Cr

Others – Ship Management Services, Finance and Insurance Services, Seafood export facility, Policy Guidelines Consultancy: INR 250-300 Cr

05 Means of Finance

The cost of the project is approx. INR 3500 Cr and is proposed to be financed as Promoter's contribution as equity 1500 Crore and Term Loan from Financial Institutions 2000 Cr. The project may be implemented by relevant Central Ministries, State Governments, Ports and other agencies primarily through the private or PPP mode.

Cruise Tourism and Furniture Manufacturing/Processing are high potential industries that can lead the development of the maritime cluster

Cruise Tourism

- Kochi has a 31% share as a 'port of call'; highest among Indian ports
- Between 2014 and 2016, Kochi Port saw a 37% CAGR increase in cruise passengers visiting the port with 82,000 cruise passengers in 2016-17
- Number of cruise ships increased at CAGR of 9% from 2014 to 2016 with 46 cruise ships visiting in 2016-17.

Furniture Manufacturing

- Kerala has major furniture Clusters in Taliparamba, Malappuram and Ernakulam and minor clusters in Kollam and Thrissur
- In 2015, the furniture market in India was valued at USD 25 Billion and is expected to grow at a CAGR of 12.9% during the 2016-2023 period
- Port-based furniture cluster is ideal due its location and established ecosystem

Existing Facilities at Cochin Port

- Wharf at Ernakulam
- Wharf at Mattancherry
- International Container Transhipment Terminal at Vallarpadam
- LNG Terminal
- Single Point Mooring for Crude Oil
- International Cruise Terminal
- 65,000 Sq. mt. Storage Facilities incl. 11 Sheds and 7 Warehouses

Ongoing/Planned Facilities at Cochin Port

- International Ship Repair Facility
- Multi User Liquid Terminal (MULT)
- Cruise Terminal cum Exhibition/Convention Hall near BTP Jetty
- Refurbishment and Capacity Enhancement of COT, NTB, and STB
- Bitumen Complex
- Cement Hub
- Grain Terminal
- Cargo Park
- Sand Mining Project
- Cryogenic Warehouse
- Tea Park
- Ro-Ro Facility

Key players

- Mumbai and Chennai have established themselves as centres of maritime trade in India.
- Other prominent proposed future maritime clusters include Ennore in Tamil Nadu and Saurashtra in Gujarat.

Market Landscape

- Proposed Maritime cluster in Kochi will be first of its kind in Kerala.
- Government of India's focus on ease of doing business such as allowing 100% FDI under automatic route for projects related to construction and maintenance of ports and harbors provides a promising outlook for future development and growth of port infrastructure market in India.
- Other developing regions such as Vizhinjam, Poovar and Azhikkal will see development of similar facilities in Ship Building, Cruise tourism, Ship Management and Ancillary Services.
- The Ministry of Shipping's Sagarmala Program is striving to develop maritime clusters across major ports in India, envisioning them to be the focal points for economic development along India's coastline. Ministry of Shipping under the Sagarmala Programme plans to develop 14 Coastal Economic Zones (CEZs) in India targeting major industrial clusters in each zone
- Kochi port being located on the south-western coast, is an ideal location to be linked to domestic cruise circuits that connect Kochi, Mangalore, Goa and Mumbai offering cultural, heritage, religious
- The potential for developing a maritime cluster with export oriented industrial clusters can be utilized by providing greater export incentives to the industry, improvement of logistics infrastructure, and simplification of export processes including faster documentation and custom clearance and leisure destinations
- The existing "Kochi International Marina" on Bolgatty Island is a full-fledged marina of international standards in India with favorable conditions and minimum tidal variations throughout the year. By providing adequate facilities for the yacht owners and their crews, with various water sports activities in place, this marina has huge potential to augment the tourist flow to Kerala

**Indicative positioning of land*

Investment Opportunity

Kochi being India's most important ports is an important presence in the maritime field. With the onset of a common link connecting all the stakeholders under the cluster, immense potential of maritime activity in Kerala is yet to unfold.

PPP has been the primary model for port sector projects like operation and management of ports, construction of deep-water ports, container terminals, shipping yards and bulk ports. India's Maritime Agenda 2010-2020 targets to grow India's port handling capacity to 3.1 billion ton by 2020. The private sector is expected to play a key role in achieving this ambitious target.

This project aims to attract investments in light of modernizing port infrastructure facilities, shipbuilding and repair facilities, ancillary services, development of industrial clusters etc. leading to robust development of the maritime ecosystem in the state

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