Industrial Corridors for Economic Growth

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Outline

• Industrial / Economic Corridor - Concept
• Vizag-Chennai Industrial corridor (VCIC)
• Interventions by ADB in VCIC
Section

Industrial Corridor Concept
Transport Corridor vs Industrial Corridor

Transport Corridor

- Rail Road Improvement
- Trade Facilitation

Industrial Corridor

- Integrated and Sustainable Development
- Skill Up gradation
- Proactive Urbanization
- Improve Industrial Infrastructure
- Reliable inputs to Manufacturing (skilled labour, power, water & land)
- Road / Rail improvement
- Smart City Development
- Spatial Planning
- Investor Friendly Policies

- Growth Poles / Nodes
- Transport Linkages
- Support Infrastructure

- Provide suitable investment climate
- Higher production capacities
- One stop services
- Fiscal incentives
- Improve Transport Infrastructure
- Reduce costs – Coordinated movement of passengers & goods
- Skills development center / HRD
- Reduction in costs of infra services – power, water etc.

Node / City

Transport linkages

Industrial centers

Influence Zone

Vizag Chennai Industrial Corridor
Three Components of Industrial Corridor

- Industrial Clusters
- Urbanization
- Trade & Transport Connectivity

- Access to Market & Gateways
- Labour, Technology, Knowledge, Innovation, Commerce
- Access Distribution Collection

Vizag Chennai Industrial Corridor
Industrial Corridor Strategy

Policy support from Government

Long term industrial strategy to bank on:
- Leveraging industrial strengths of the corridor
- Sectors choice to act as a lever for higher employment and output

Ease of doing business to focus on:
- Existing issues with the business and regulatory environment
- Current policy issues in the corridor influence areas

Overall infrastructure strategy to be driven by individual component level requirements:
- Water – differentiating requirement of industries on criticality, intensity and cost
- Energy – reliable availability / pricing of energy
  - Transportation –
  - Rail – freight vs. People
  - Ports – Capacity / Cargo
  - Roads – SH/NH/EH
  - Air – Global Connectivity

Consolidate – leverage on existing strengths of corridor
Existing coastal corridors

- Industry
- Transport
- Logistics
- Trade
- Multi-dimensional
- Industry
- Transport
- Academia and research
- Finance and banking
- Entertainment
- Tourism
- Healthcare
- Technology/innovation

VCIC Corridor

Vizag Chennai Industrial Corridor
BosWash : Multi-dimensional coastal corridor

Economic activity - Only 2% of land mass but
- ~53 million population
- ~20% of GDP

Employment
- 24 million jobs, 20% of jobs in the U.S.

Technology & Innovation
- 3.7 million knowledge industry jobs in 10 core NEC cities
- 39% of U.S. patents since 2000

Finance & Banking
- 6 of top 10 U.S. financial institutions
- 31% of U.S. venture capital deals

Education & Healthcare
- 6 of top 10 ranked U.S. universities
- 7 of top 18 nationally ranked hospitals

Tourism & Entertainment
- 7 of top 20 most visited museums in the world
- 4 of top 15 U.S. cities for international visitors

Transport Services
- Electrified rail line carrying most of the rail passenger traffic in the US
- Various commuter rail services to the major urban centers along the corridor
- Interstate 95 6-8 lane highway
Greater Mekong Sub Region (GMS) Corridor

- Transport corridors connecting nodes in the GMS region
- Development thrusts (i) strengthen infrastructure linkages (ii) facilitate cross-border trade and investment, (iii) enhance private sector participation (iv) develop human resources and skill competencies, and (v) protect the environment
- 36 investment projects assisted by ADB in the GMS program
- Transport corridors generated plans for three economic corridors—
  - Southern Economic Corridor (connecting Cambodia–Viet Nam with Thailand)
  - East–West Economic Corridor (connecting Lao PDR–Viet Nam with Thailand)
  - Northern Economic Corridor (connecting Yunnan with Lao PDR and Thailand).
Industrial Corridors in South and South East Asia

- **Chennai Dawei Corridor** – A maritime corridor which further connects to the Trilateral Highway between India – Myanmar – Thailand.

- **Trilateral Highway** – 3,200 km highway to link India to Myanmar and then further to Southeast Asia.

- **Greater Mekong Sub Region Corridor** – Connects to Tri-lateral Highway and Chennai Dawei Corridor. Aimed at transforming the corridor towns into economic hubs.

- **Bangladesh China India Myanmar Economic Corridor (BCIM) Corridor** - First multimodal expressway between India and China through Myanmar & Bangladesh.

- **ECEC Corridor** – envisaged to run from eastern India (Kolkata) to Chennai in southern India which will play a key role in boosting trade with Southeast Asia.

- **Delhi Mumbai Industrial Corridor and DFC** - Multi-modal corridors with industrial clusters and new industrial cities as 'Smart Cities'.

- **Vizag Chennai Industrial Corridor (VCIC)** is the key part of the ECEC

- **VCIC** is best suited to execute India’s “Act East Policy” of engaging with East Asian economies
Objectives of VCIC

- **Expanding Industrial Output**
  - Increasing Manufacturing sector's contribution to GDP and boost exports

- **Expanding employment opportunities**
  - Increase employment opportunities in formal sector

- **Increasing labour productivity and wages**
  - Focus on labour productivity improvements and increasing wages

- **Promoting Dynamic SMEs**
  - Focus on leveraging existing supply chains

**In the Business induced scenario (BIS) VCIC has the potential to**

- Increase the GDP in the Corridor districts by **6 times**.
- Expansion of manufacturing output by **7 times** the current output.
- Creating additional employment of over **11 million** people.
Manufacturing in Andhra Pradesh

Manufacturing sector's contribution to total GDP

- Thailand: 34%
- China: 32%
- Poland: 28%
- Hungary: 26%
- Malaysia: 24%
- Indonesia: 24%
- South Korea: 22%
- Argentina: 18%
- Japan: 18%
- Germany: 17%
- Tamil Nadu: 17%
- Gujarat: 17%
- Maharashtra: 18%
- India: 15%
- AP: 10%

District wise - Manufacturing sectors contribution to total GDP

- Srikakulam: 8%
- Vizianagaram: 10%
- Visakhapatnam: 22%
- East Godavari: 13%
- West Godavari: 5%
- Krishna: 7%
- Guntur: 8%
- Prakasam: 6%
- Nellore: 6%
- Chittoor: 9%
- Kadapa: 11%
- Anantapur: 12%
- Kurnool: 7%

Source: World Bank, District Domestic Product, AP, RBI Handbook of statistics
VCIC encompasses one of the largest concentration of industrial, mineral and urban nodes supplemented by strong local factor advantages.

- The Corridor contributes to 5% of national GDP
- Influence area - over 110,000 sq. km, 3.5% of India’s area
- Industrialization be supplemented by natural resources available in the region (natural gas, minerals, agriculture products)
- The major ports well connected and in close proximity to many of the East Asian economies (80% of AP’s coastline)
VCIC Hinterland Connectivity

VCIC Corridor is well connected with its Hinterland – Eastern Karnataka, Central India and Eastern India

Eastern Karnataka
- Three regions in Karnataka State
  - Bangalore, Tumkur–Chitradurga, and Bellary – Hospet
  - Expected to attract large amounts of investment in the near future
  - Part of proposed Chennai–Bangalore Industrial Corridor (CBIC) and Bangalore–Mumbai Economic Corridor (BMEC)
  - VCIC ports are only convenient gateway port for this region

Central India
- Two regions in Central India
  - Hyderabad & Nagpur – Jabalpur Belt - further connected to the N-S corridor through NH7
  - Important production and consumption centers
  - Can serve as cargo agglomeration centers for north and central India

Eastern India
- Prime region connecting Eastern India
  - Bokaro – Dhanbad – Dankuni arc
  - Industrial are important cargo centers – due to technical advantage of the VCIC ports over Eastern India ports
  - A segment of Eastern Corridor

VCIC Corridor also connects to the Central and Northern Indian hinterland via proposed Delhi Chennai Dedicated Freight Corridor (DFC)
The Building Blocks

Node Centric Development

Promoting Key Industrial Sectors

Connectivity and Infrastructure

Proactive Urbanization

Vizag Chennai Industrial Corridor
Andhra Pradesh
Tamil Nadu

NH 16 alignment

1. Visakhapatnam
2. East Godavari
3. West Godavari
4. Krishna
5. Guntur
6. Prakasam
7. Nellore
8. Kadapa
9. Chittoor
10. Nellore
11. Chennai

Node -centric development

Growth Nodes – Industrial Production Centers

Four nodes have been identified

- Vishakhapatnam Node
- Kakinada Node
- Gannavaram – Kankipadu Node
- Yerpedu – Srikalahasti Node
Industrial Sectors in VCIC

**Vishakhapatnam**
- Petroleum
- Steel
- Fertiliser
- Power
- Minerals
- Engineering
- Pharma

**East Godavari**
- Fertiliser
- Food Processing
- Chemicals
- Power
- Iron and Steel
- Graphite
- Ceramic

**Guntur**
- Textiles
- Cement
- Chemical
- Food processing

**Kadapa**
- Food Processing
- Metallurgy
- Textiles

**Chittoor**
- Food Processing
- Automobiles
- Engineering
- Chemicals

**Krishna**
- Automobiles
- Textiles & Apparels
- Steel
- Cement

**Kakinada Node**

**Gannavaram – Kankipadu Node**

**Yerpedu – Srikalahasti Node**

Andhra Pradesh

Tamil Nadu

NH 16 Alignment
A strategic mix of industries has been shortlisted to achieve targeted outcome of promoting manufacturing driven transformation

<table>
<thead>
<tr>
<th>Sectors</th>
<th>AP's comparative advantage (GVA basis)</th>
<th>Aligned to Global Production Networks</th>
<th>Activating higher value addition</th>
<th>Employme nt creation</th>
<th>Thrust to MSME</th>
<th>Top sectors in terms of investment in the corridor</th>
<th>Driving Export growth</th>
</tr>
</thead>
<tbody>
<tr>
<td>Food processing</td>
<td>✓</td>
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<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Metallurgy</td>
<td></td>
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<tr>
<td>Chemical and Petrochemical</td>
<td></td>
<td></td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
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<tr>
<td>Pharmaceuticals</td>
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<td>✓</td>
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<td>✓</td>
<td>✓</td>
<td>✓</td>
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<tr>
<td>Automobiles</td>
<td></td>
<td></td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
</tbody>
</table>
Industries that may hold the potential for future industrial development ("we are lagging and must get into") have also been shortlisted.

<table>
<thead>
<tr>
<th>Sectors</th>
<th>Sub-segments with highest Trade Volume (Export and Import)</th>
<th>Policy support/Government’s focus/revealed disadvantage</th>
<th>Increased contribution to global trade</th>
</tr>
</thead>
<tbody>
<tr>
<td>Medical Equipment</td>
<td>✅</td>
<td></td>
<td>✅</td>
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<tr>
<td>Plastics</td>
<td>✅</td>
<td></td>
<td>✅</td>
</tr>
<tr>
<td>Organic Chemicals</td>
<td>✅</td>
<td></td>
<td>✅</td>
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<tr>
<td>Aerospace</td>
<td>✅</td>
<td>✅</td>
<td>✅</td>
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<tr>
<td>Electronics</td>
<td>✅</td>
<td>✅</td>
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<tr>
<td>Textiles</td>
<td>✅</td>
<td>✅</td>
<td>✅</td>
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<tr>
<td>IT/ITeS</td>
<td></td>
<td>✅</td>
<td></td>
</tr>
</tbody>
</table>
Connectivity and Infrastructure development

• Road network
• Rail network
• Gateways (Ports & Airports)
# VCIC Road Network

## Existing and Planned Capacity

<table>
<thead>
<tr>
<th>Particulars</th>
<th>Existing Capacity</th>
<th>Planned Capacity Augmentation by Government</th>
</tr>
</thead>
<tbody>
<tr>
<td>Spine (NH 16)</td>
<td>800 km (currently 4 lane)</td>
<td>Entire network of 800 km proposed to be expanded to 6 lane under 7 different projects</td>
</tr>
<tr>
<td>Alternate Spinal Connectivity</td>
<td>383 km</td>
<td>Proposed Expansion of the existing 383 km&lt;br&gt;• 255 km : single lane to two lane&lt;br&gt;• 128 km : 2 lane to 4 lane</td>
</tr>
<tr>
<td>Grid Network</td>
<td>1839 km</td>
<td>Additional road network of 68 km&lt;br&gt;Proposed Up-gradation&lt;br&gt;• 1558 km : SH to NH conversion followed by 4 lane connectivity&lt;br&gt;• 281 km : 2 lane to 4 lane upgradation</td>
</tr>
</tbody>
</table>

## Proposed Additional Capacity

Node centric network development of roads in the VCIC corridor in the next 5 years (in addition to the planned capacity):

- Vishakhapatnam: 393 km
- Kakinada: 175 km
- Gangavaram Kankipadu: 234 km
- Yerpedu Srikalahasti: 557 km

*SH – State Highway, NH – National Highway (km)
## VCIC Rail Network

### Existing and Planned Capacity

<table>
<thead>
<tr>
<th>Particulars</th>
<th>Existing Capacity</th>
<th>Capacity Augmentation /Expansion</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Spine</strong></td>
<td>531 km (Capacity utilization &gt;80%)</td>
<td>Capacity augmentation proposed through development of two DFC – Delhi to Chennai via Vijaywada and Kharagpur to Vijaywada</td>
</tr>
<tr>
<td><strong>Grid Network</strong></td>
<td>1720 km</td>
<td>Entire grid network has been planned for expansion</td>
</tr>
</tbody>
</table>

### Proposed Additional Capacity

Node centric development of rail network on the VCIC corridor in the next 5 years (in addition to the planned capacity) (km)

- Vishakhapatnam
- Kakinada
- Gangavaram Kankipadu
- Yerpedu Srikalahasti
- Port Connectivity Projects
### VCIC Gateways

#### Port

<table>
<thead>
<tr>
<th>Particulars</th>
<th>Existing Capacity</th>
<th>Planned &amp; Proposed Capacity</th>
</tr>
</thead>
</table>
| Major and 4 Minor Ports | Total capacity of 126 million tonnes per annum (Average capacity utilization > 80%) | • Planned Capacity augmentation of existing ports: 468 million tonnes per annum  
• Greenfield port (operations to be commenced soon): capacity of 230 million tonnes per annum  
• 3 port proposed to be developed (in study phase)  
• 1 port is under development |

#### Airport

<table>
<thead>
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<th>Existing</th>
<th>Planned &amp; Proposed Capacity</th>
</tr>
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</table>
| Airports   | 4 Airports | • Upgradation of 3 existing airports  
• Greenfield international airport at Vishakhapatnam in place of the existing airport  
• 3 Regional Greenfield Airports  
• 2 No-frills airport |
Proactive urbanization

Urban Infrastructure Needs

• Reliable municipal services (24x7 water supply, low NRW, 100% wastewater and solid waste collection and treatment, 0% flooding, etc.)
• Efficient public transport, Reliable power, and telecom services
• High quality social infrastructure (education, health, entertainment, etc.)
• Affordable workforce housing

Short term strategies

• Develop identified cities into Smart Cities (e.g., Vizag)
• Strengthening existing urban centers
• Public transport connections to economic centers

Long-Term Strategies

• Integrated Townships: Industrial, Residential, Commercial, and Institutional
• New urban development at or near new economic centers
• Hierarchically structured public transport networks
Section

ADB Interventions
The Approach

Near-term (0 to 3 years): Focus on de-bottlenecking – both physical infrastructure and institutional and policy framework.

Short-term (Upto to 5 years): Focus on capital investments that stimulate demand and generate revenues. Examples include development of brownfield industrial clusters.

Medium-term (5-10 years): Investments that require some master planning as well more lumpy investments.

Long-term (More than 10 years): Major greenfield projects. Examples include developing a new economic node or a city.
**Implementation Strategy**

**Investment Plan over the RPP period**
- Ascertaining sector wise investments required
- Short term (0-5 years), Medium term (5-10 years) and Long term (beyond 10 years).

**Project Prioritization and Phasing**
- Project prioritization and phasing plan for each of the sectors like roads, railways, ports, airports and logistics.

**Cluster development approach**
- Identification of inter-sectoral linkages to promote cluster development.
- Classification of projects as ‘driver projects’ and ‘linkage projects’

**Investment Promotion**
- Investment promotion strategies to attract timely investments

**Skills Mapping**
- Skill and resources mapping for the region
- Strategies to deal with competing skill demand and availability
Approach for the RPP Study

Phase 1

1a As-Is Assessment

Industries
- Existing industrial scenario
  - Output
  - Export
  - Employment, etc.
- Global Production Network

Infrastructure
- Existing infrastructure linked to industry:
  - Road
  - Rail
  - Airport
  - Port
  - Inland waterway
  - Industrial water
  - Power and energy
  - Logistics
- Existing infrastructure linked to urban development (QoL):
  - Airport
  - Urban transport
  - Recreation/entertainment
  - Water
  - Waste and sewerage system
  - Power & energy

Regional profiling of the delineated corridor

Review policies & regulations impacting Investment Climate

Logistics & Trade Facilitation policies

Phase 2

2 Forecasting and Demand Assessment

Industrial growth linked forecasts
- Infrastructure Demand
- Land Demand
- Skill Demand

Urban growth linked forecasts
- Infrastructure Demand
- Land Demand
- Social enablers

Consolidated Demand

Gap Assessment

Phase 3

5 Comprehensive Regional Perspective Plan

3 Development strategies
- Industries
- Urban development
- Land Management
- Transportation
- Inland waterway
- Logistics
- Power & Energy

Project identification

Project prioritization

Regulatory & Implementation framework

4 Develop Action Plan to address policy & regulatory enablers for improving Investment Climate

Investment promotion and stakeholder engagement strategies
What will drive MANUFACTURING in 4 nodes and 36000 acre land bank

- Industrial Infrastructure
- Regulatory Environment
- Trade and the GPN
- Demand Supply

Exiting infrastructure strength can be leveraged to promote upcoming sectors like Auto, IT, construction materials.

Mature industrial development (spatial dispersal, infrastructure availability etc.) compared to other districts need support infra.

Concentration of industries to the east due to shortage of water & absence of urban center needs to be addressed.

Need to mitigate water shortage to address spatial dispersal and leverage the existing rail road infra.

Target Districts

Shortlisted Sectors

Priority Industries

Infrastructure Creation

Business Facilitation

Strategies

Analytical Tools

Construct & Validate

Ingredients

Value chains

Geographies

Trade and Logistics

Linkages

Sources and Supplies

Last Mile Infrastructure

Employment & Skills

Support Services

Drivers – Tools – Strategies

INTEGRAL INDUSTRY COMPONENT

Coastal concentration of industries and land bank

Large number of existing medium and small scale Chemical and Paper industries need promotion to boost employment

Demand Supply

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Drivers – Tools – Strategies
ADB’s Country Operations Business Plan (COBP) for AP

**2014:** Initiated technical assistance (TA) support and completed Conceptual Development Plan of the VCIC (PwC and Deloitte)

**2015:**

- Continued TA to prepare Regional Perspective Plan (RPP)
- Initiated new TA for preparation of Master Plan of identified industrial nodes in the VCIC
- Initiate processing of project ($500 million) AP Industrial Corridor Development for critical infrastructure needs in power, transport, urban and industrial sectors

**2016 and 2017:**

- Program and project loans(s) depending upon AP’s absorption capacity
### ADB Interventions

**Policy Based**

- Support to government in policy, institutional, and governance reforms to promote accelerated industrial development
  - Investment climate - 'Ease of doing Business'.
  - Ease of logistics and Trade facilitation
  - Integrated Industrial Townships policy
  - Proactive Urbanization-Policy and action plan for smart cities
  - Labor reforms
  - Setting up of corridor management authority

**Project Based**

- Support investments in physical infrastructure in the selected nodes ($600 million in 2015 followed by successive future investments).
  - Internal infrastructure in selected industrial clusters
  - Transport, Power and urban Infrastructure
  - Infrastructure and advisory support for smart cities
  - Project management consultants, detailed design and consultants, and other consultant support
  - Capacity building of institutions working for corridor management.
  - Skill development and capacity enhancement of workers, entrepreneurs, students, etc.

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**Technical & Financial Support**
VCIC has the potential to increase the GDP in the Corridor districts by six times, manufacturing output by 7 times creating additional employment of over 11 million...

**Business-as-usual scenario (BAU).** Corridor growth trends forecasted by correlating the manufacturing sector’s growth in nine districts with India’s projected GDP growth.

**Business-induced scenario (BIS).** Forecast of short-listed industrial sectors at growth rates pursued by relevant stakeholders.

The contribution of manufacturing sector is envisaged to increase to 11% from the current contribution of 8%

*BAU scenario is based on the correlation of the VCIC’s GDP with India’s GDP, hence, is sector growth agnostic.

• To improve “Ease of Doing Business” and benchmark it with the best in the world
• To increase manufacturing sector’s share from 10% to 25% with specific targets, strategies, timelines, and action plans
• To speed up infrastructure development and overcome lack of preparation, slow execution, time and cost overruns, promote PPP, mobilize private sector finance, etc.
• To promote world class integrated townships having industrial, commercial, residential, and institutional infrastructure
Thank You
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VCIC – Existing and Proposed Infrastructure

Vishakhapatnam Node

Legend
- City with more than 0.1 million population
- Existing fully occupied Industrial Park/Estate / SEZ –
- Industrial Park/SEZ with land available –
- Airport
- Port
- Existing road
- Proposed road expansion project
- Proposed rail project
- Proposed VCIC cluster
- Water body
- Desalination plant