High-Level Design (HLD)

Foreign Direct Investment Analysis

Revision Number - 1.2

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RAHUL

Document Version Control

Date Issued	Version	Description	Author
02/02/2022	1.0	Abstract, Introduction, General Description	Rahul
06/02/2022	1.1	Design Detail, KPI, Deployment	Rahul
14/02/2022	1.2	Final Revision	Rahul

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ABSTRACT

Foreign Direct Investment (FDI) is considered as an engine of economic growth. Before the economic reforms, the flow of foreign direct investment to India has been comparatively limited because of the type of industrial development strategy and the various foreign investment policy followed by India. Government policy towards. Foreign capital was very selective. Foreign investment was normally permitted only in high technology industries in priority areas and export-oriented areas. So the inflow of FDI before the 1990s was very low. To fully utilize the country's immense economic potential, the government launched economic reform in 1991. The new government policies are simple, transparent. And promote domestic and foreign investment. India's abundant and diversified natural resources, its sound economic policy, good market condition and high skilled human resources make it a proper generation for FDI. After long years of journey, FDI was also introduced in various sectors and states in India. The investment of FDI in various States and sectors leads to the rapid growth of the Indian economy.

1 Introduction

1.1 Why this High-Level Design Document?

The purpose of this High-Level Design (HLD) document is to add the necessary detail to the current project description to represent a suitable model for coding. This document is also intended to help detect contradictions before coding and can be used as a reference manual for how the modules interact at a high level.

The HLD will:

- Present all of the design aspects and define them in detail
- Describe the user interface being implemented
- Describe the hardware and software interfaces
- Describe the performance requirements
- Include design features and the architecture of the project
- List and describe the non-functional attributes like:

  -Security
  -Reliability
  -Maintainability
  -Portability
  -Reusability
  -Application compatibility
  -Resource utilization
  -Serviceability

1.2 Scope

The HLD documentation presents the structure of the system, such as the database architecture, application architecture (layers), application flow (Navigation), and technology architecture. The HLD uses non-technical to mildly-technical terms which should be understandable to the administrators of the system.

2 General Description

2.1 Product Perspective & Problem Statement

This project aims to Analyze Foreign Direct Investment in India from FY 2000-01 to FY 2016-17. To achieve the goal, we used a data set that is formed by Collecting data from govt. website. The main aim is to get the information regarding Sector-wise FDI and Year-wise FDI Inflow.

2.2 Tools used

Business Intelligence tools and libraries works such as NumPy, Pandas, Seaborn, Matplotlib, MS-Excel, MS-Power BI, Jupyter Notebook and Python Programming Language are used to build the whole framework.

3 Design Details

3.1 Functional Architecture

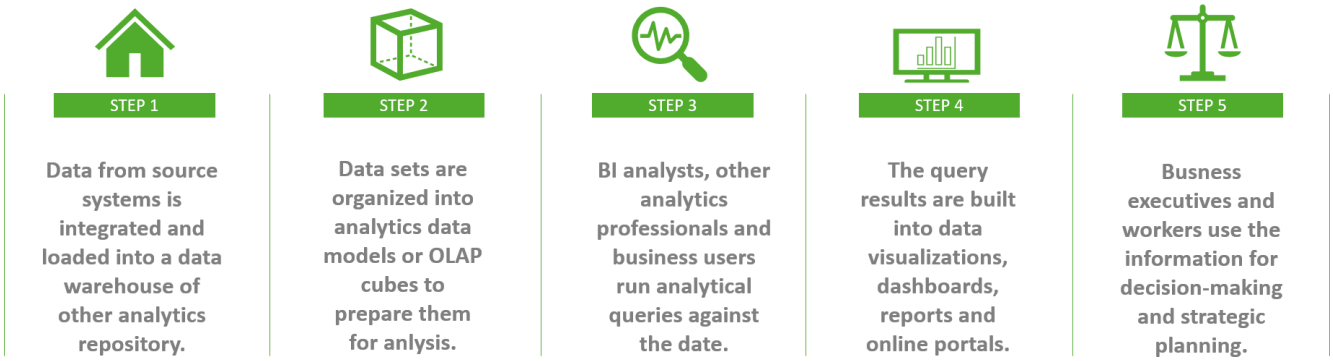
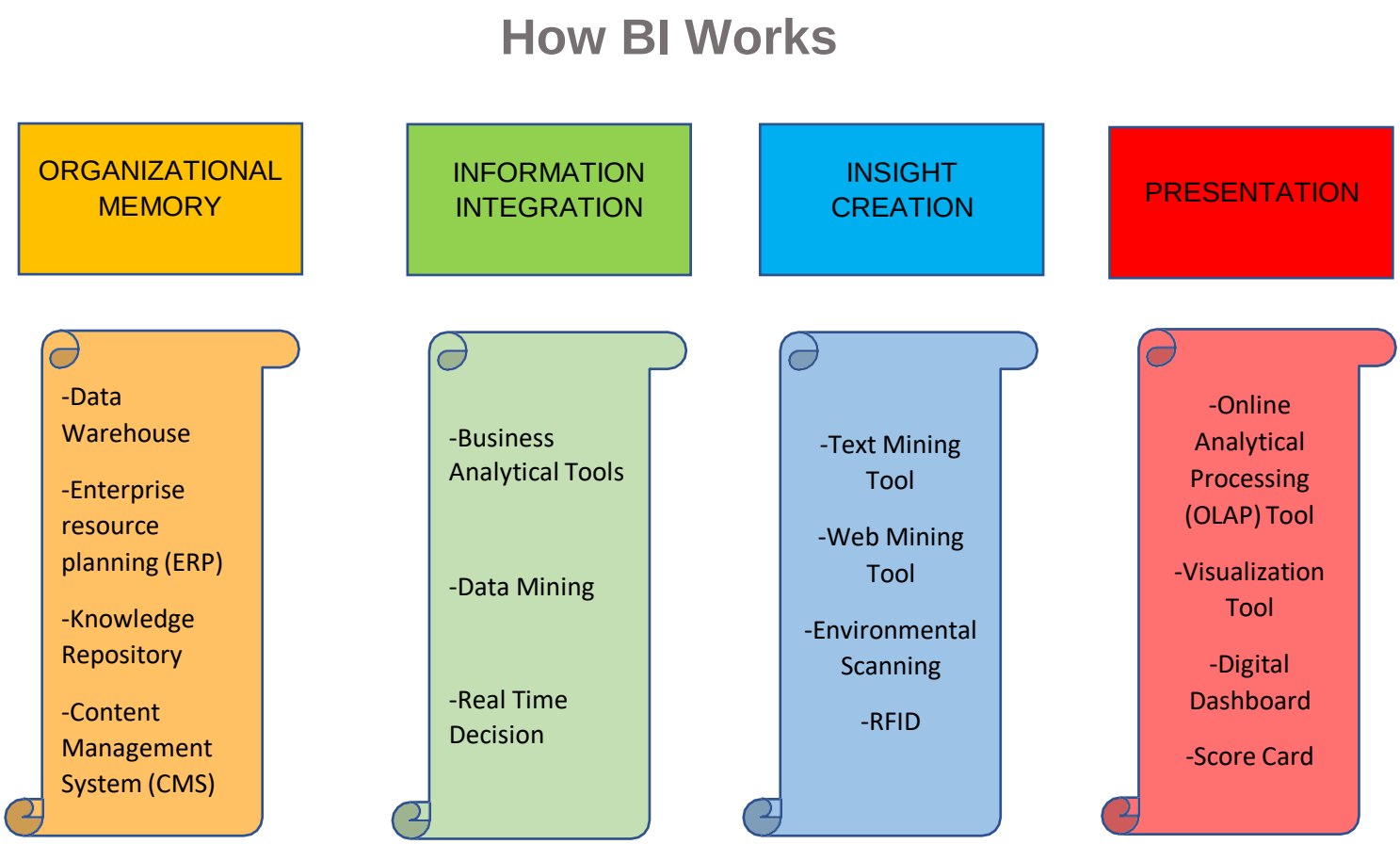


Figure 1: Functional Architecture of Business Intelligence



3.2 Optimization

1. Your data strategy drives performance

- Minimize the number of fields
- Minimize the number of records
- Optimize extracts to speed up future queries by materializing calculations, removing columns and the use of accelerated views

2. Reduce the marks (data points) in your view

- Practice guided analytics. There's no need to fit everything you plan to show in a single view. Compile related views and connect them with action filters to travel from overview to highly-granular views at the speed of thought.
- Remove unneeded dimensions from the detail shelf.
- Explore. Try displaying your data in different types of views.

3. Limit your filters by number and type

- Reduce the number of filters in use. Excessive filters on a view will create a more complex query, which takes longer to return results. Double-check your filters and remove any that aren't necessary.
- Use an include filter. Exclude filters load the entire domain of a dimension while including filters do not. An include filter runs much faster than an exclude filter, especially for dimensions with many members.
- Use a continuous date filter. Continuous date filters (relative and range-of-date filters) can take advantage of the indexing properties in your database and are faster than discrete data filters.
- Use Boolean or numeric filters. Computers process integers and Booleans (t/f) much faster than strings.
- Use parameters and action filters. These reduce the query load (and work across data sources).

4. Optimize and materialize your calculations

- Perform calculations in the database
- Reduce the number of nested calculations.
- Reduce the granularity of LOD or table calculations in the view. The more granular the calculation, the longer it takes.

  ✓ LODs - Look at the number of unique dimension members in the calculation.

  ✓ Table Calculations - the more marks in the view, the longer it will take to calculate.

- Where possible, use MIN or MAX instead of AVG. AVG requires more processing than MIN or MAX. Often rows will be duplicated and display the same result with MIN, MAX, or AVG.

- Make groups with calculations. Like include filters, calculated groups load only named members of the domain, whereas Tableau's group function loads the entire domain.

- Use Booleans or numeric calculations instead of string calculations. Computers can process integers and Booleans (t/f) much faster than strings. Boolean>Int>Float>Date>DateTime>String.

4 KPI

Dashboards will be implemented to display and indicate certain KPIs and relevant indicators for the disease.

As and when the system starts to capture the historical/periodic data for a user, the dashboards will be included to display charts over time with progress on various indicators or factors

4.1 KPIs (Key Performance Indicators)

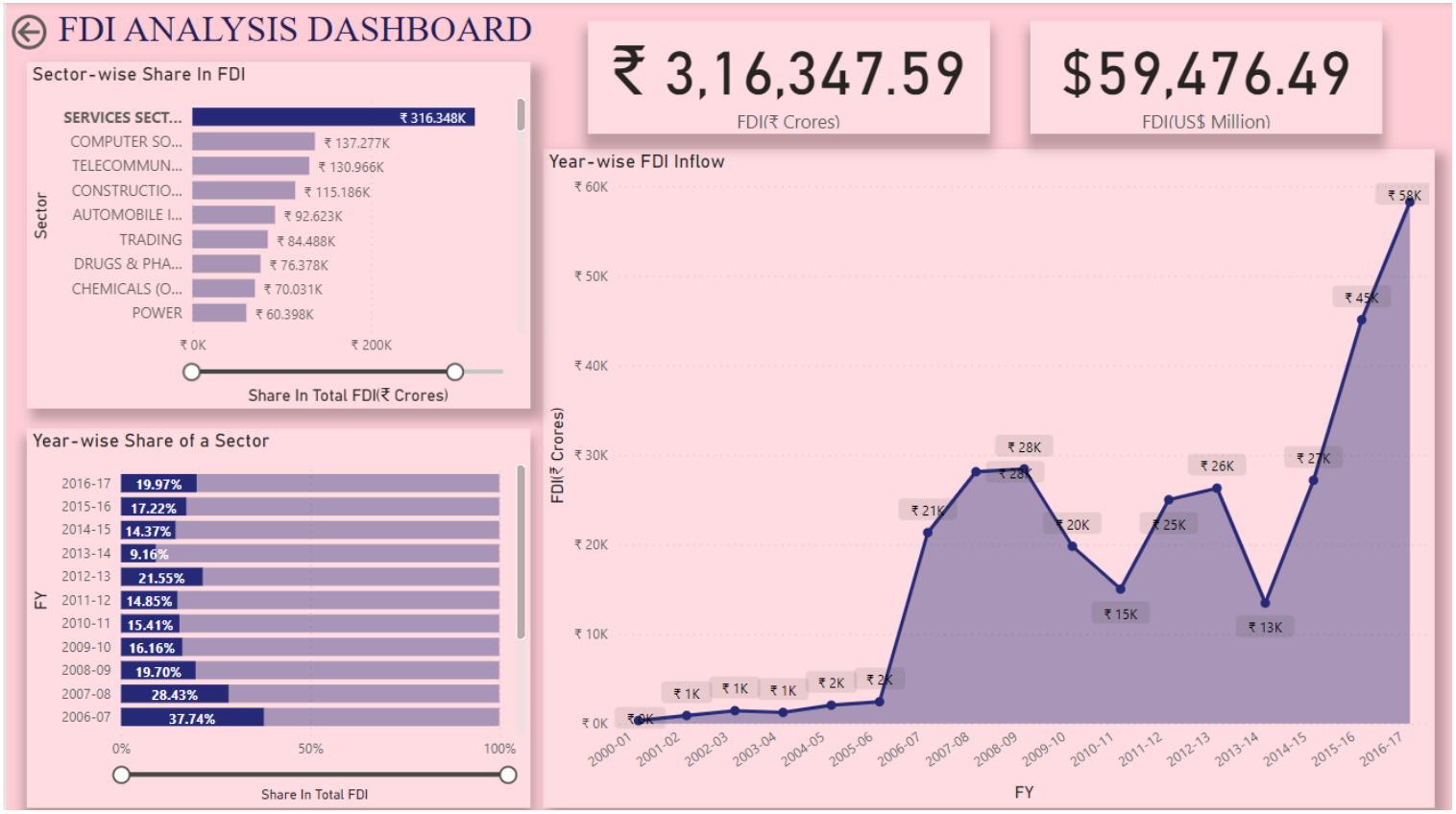
Key indicators displaying a summary of the FDI and its relationship with Sector-wise and Year-wise Investment

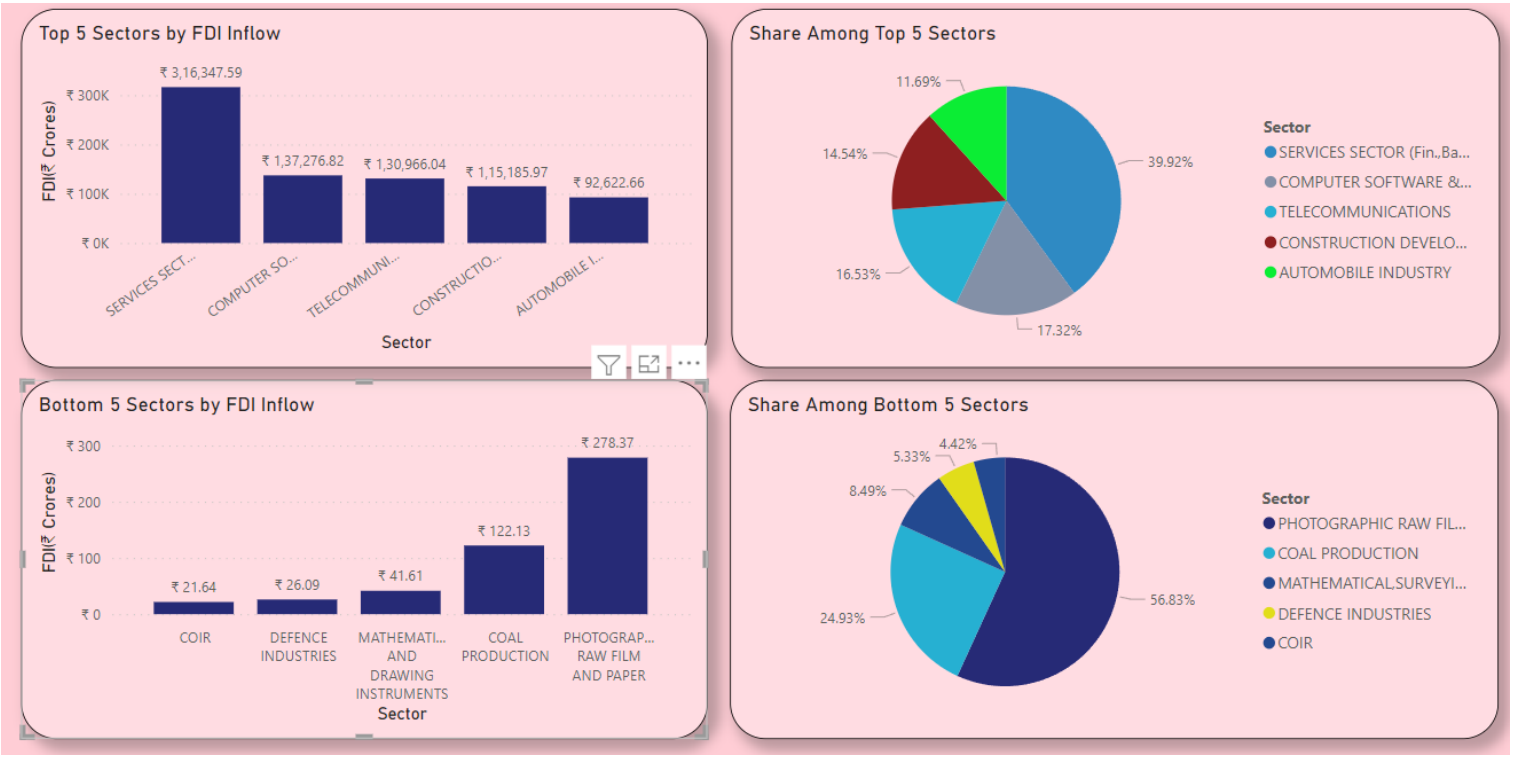
1. How much FDI each sector received From FY2000-01 to FY2016-17.
2. Total FDI FY by FY.
3. Top 10 Sectors.
4. Bottom 10 Sectors.

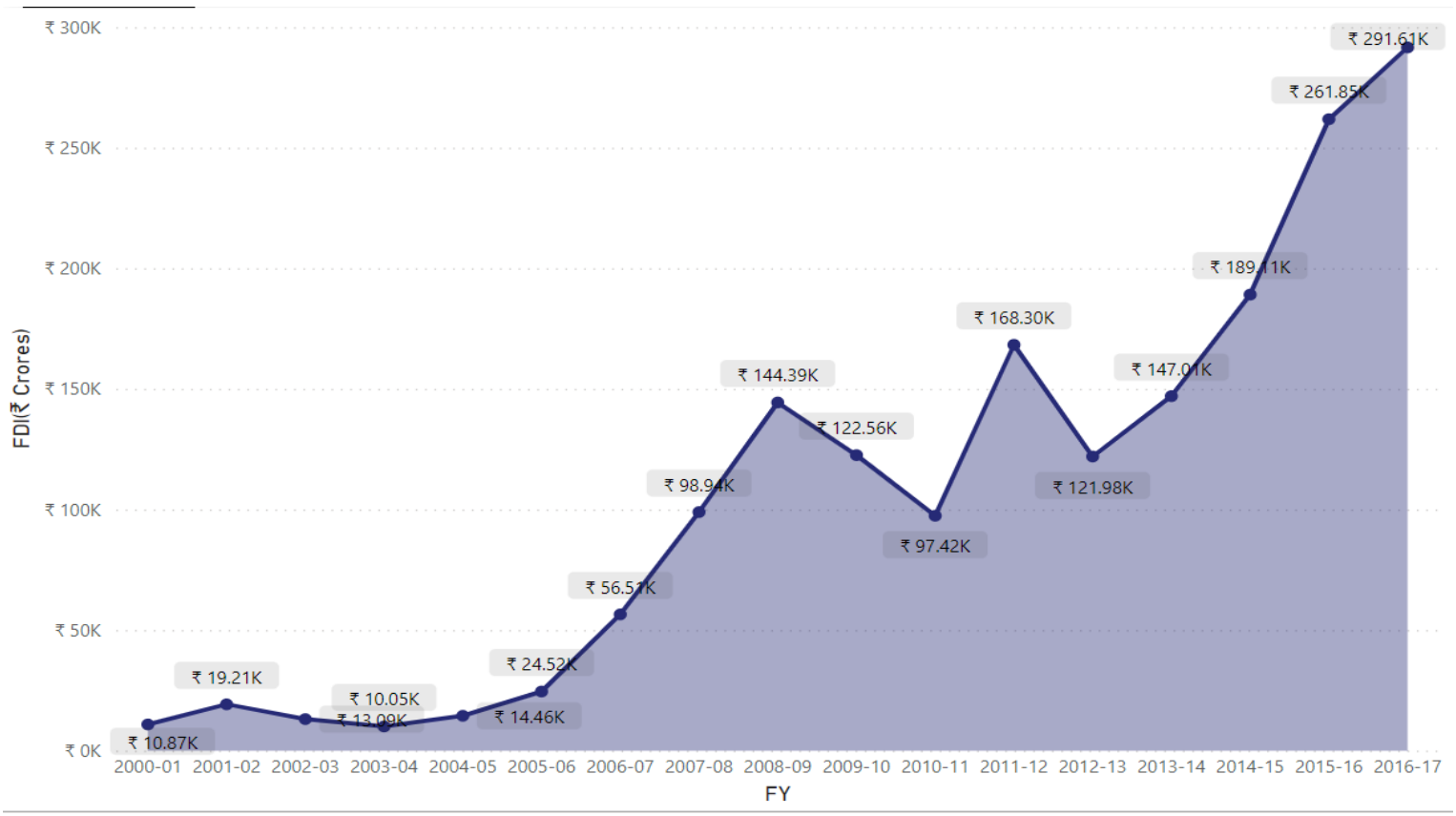
5 Deployment

Prioritizing data and analytics couldn't come at a better time. Your company, no matter what size, is already collecting data and most likely Analysing just a portion of it to solve business problems, gain competitive advantages, and drive enterprise transformation. With the explosive growth of enterprise data, database technologies, and the high demand for analytical skills, today's most effective IT organizations have shifted their focus to enabling self-service by deploying and operating Power BI at scale, as well as organizing, orchestrating, and unifying disparate sources of data for business users and experts alike to author and consume content.

Power BI prioritizes choice in flexibility to fit, rather than dictate, your enterprise architecture. Power BI Desktop and Power BI Service leverage your existing technology investments and integrate them into your IT infrastructure to provide a self-service, modern analytics platform for your users. With on-premises, cloud, and hosted options, there is a version of Power BI to match your requirements.




Top 5 Sectors by FDI Inflow
FDI(₹ Crores)
₹ 300K
₹ 200K
₹ 100K
₹ 0K
₹ 3,16,347.59
₹ 1,37,276.82
₹ 1,30,966.04
₹ 1,15,185.97
₹ 92,622.66
SERVICES SECT...
COMPUTER SO...
TELECOMMUNI...
CONSTRUCTIO...
AUTOMOBILE I...
Sector
Share Among Top 5 Sectors
11.69%
14.54%
39.92%
16.53%
17.32%
Sector
SERVICES SECTOR (Fin.,Ba...
COMPUTER SOFTWARE &...
TELECOMMUNICATIONS
CONSTRUCTION DEVELO...
AUTOMOBILE INDUSTRY
Bottom 5 Sectors by FDI Inflow
FDI(₹ Crores)
₹ 300
₹ 200
₹ 100
₹ 0
₹ 21.64
₹ 26.09
₹ 41.61
₹ 122.13
₹ 278.37
COIR
DEFENCE INDUSTRIES
MATHEMATI... AND DRAWING INSTRUMENTS
COAL PRODUCTION
PHOTOGRAP... RAW FILM AND PAPER
Sector
Share Among Bottom 5 Sectors
4.42%
5.33%
8.49%
24.93%
56.83%
Sector
PHOTOGRAPHIC RAW FIL...
COAL PRODUCTION
MATHEMATICAL,SURVEYI...
DEFENCE INDUSTRIES
COIR


FDI(₹ Crores)
₹ 300K
₹ 250K
₹ 200K
₹ 150K
₹ 100K
₹ 50K
₹ 0K
₹ 10.87K
₹ 19.21K
₹ 13.09K
₹ 10.05K
₹ 14.46K
₹ 24.52K
₹ 56.51K
₹ 98.94K
₹ 144.39K
₹ 122.56K
₹ 97.42K
₹ 168.30K
₹ 121.98K
₹ 147.01K
₹ 189.11K
₹ 261.85K
₹ 291.61K
2000-01
2001-02
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2004-05
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2015-16
2016-17
FY