



# Industrial Air Pollution Control in India

Swedish Energy and Environment Technology in India Program

Factpack

Swedish Trade Council  
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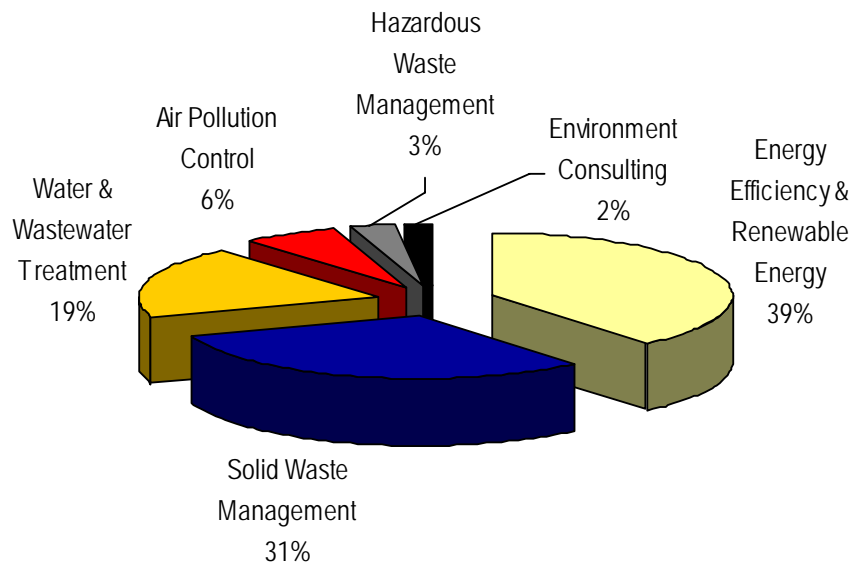
# AGENDA

- Overview of environment technology market in India
- Reasons for air pollution
- Major air pollution industries
- Major initiatives taken by government for air pollution control
- Emerging new areas in air pollution control
- Annexure
  - List of small scale polluting industries
  - List of industries where air pollution control is enforced by State Pollution Control Board (SPCB)
  - List of major laws/acts in India for air pollution control
  - List of contacts of major agencies in area of pollution control

# INDIA'S ENVIRONMENTAL TECHNOLOGIES MARKET IS OVER USD 6.42 BILLION AND GROWING FAST

## Break-up of Environmental Services / Technologies

Total market = USD 6.42 billion (%, 2007)

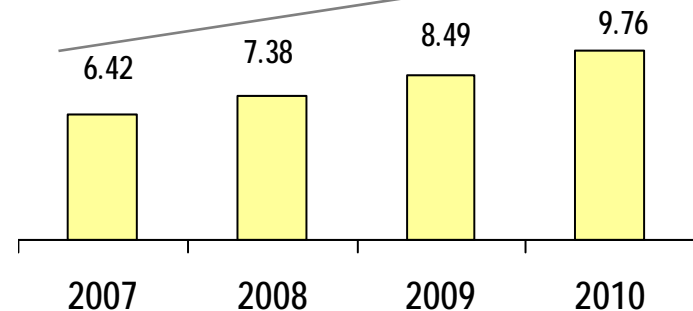


Air pollution control market in India is about USD 0.4 Billion and is growing at 15% annually

Cleantech Sectors	Market Size (USD Billion)	Growth rate
Energy Efficiency & Renewable Energy	2.5	15%
Solid Waste Management	2	20%
Water & Wastewater Treatment	1.2	15%
<b>Air Pollution Control</b>	<b>0.4</b>	<b>15%</b>
Hazardous Waste Management	0.2	10%
Environment Consulting	0.124	20%
<b>Total</b>	<b>6.424</b>	<b>15%</b>

## Environmental Technologies / Services Market Growth (USD billion)

CAGR (2007-2010): 15%

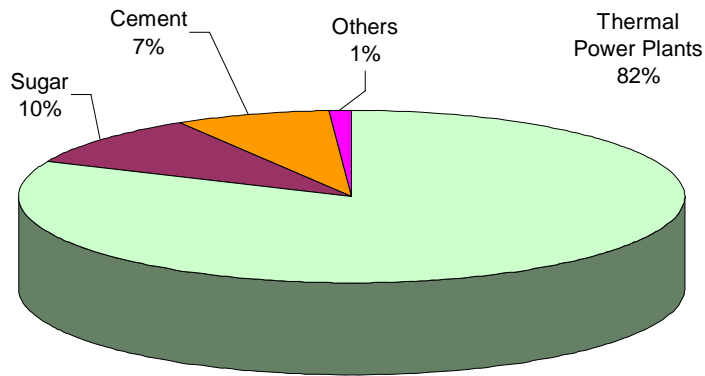




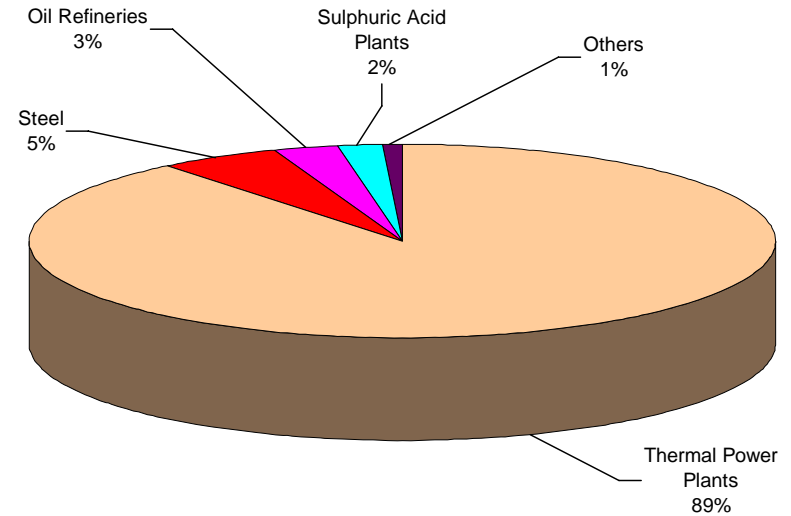
## REASONS FOR HIGH AIR POLLUTION IN INDIA

- Poor quality of fuel (coal, diesel, petrol, fuel oil)
- Toxic and hazardous air pollutants emission from chemical industries (pesticides, dye and dye intermediate, pharmaceutical etc.) specially located in industrial states (Gujarat, Maharashtra, A.P. And Tamil Nadu)
- Use of high ash coal for power generation
- Inadequate pollution prevention and control system in small/ medium scale industry (S.M.S) (brick kiln, foundry, stone crusher etc.)
- Poor compliance of standard in small/ medium scale industry
- Large number of polluting genset operating in commercial area
- Predominance of 2-stroke engines in vehicles
- Uncontrolled growth of vehicle population and poor inspection and maintenance system for in use vehicle

# MAJOR AIR POLLUTING INDUSTRIES



**Share of Suspended Particulate Matter Load (tonnes/day) by Different Categories of Industries (With Control Device), Total Load = 5365 tonnes/day**



**Share of Sulphur Dioxide Load (tonnes/day) by Different Categories of Industries (Total Load = 3715 tonnes/day)**

Thermal power plants are most polluting major industry – both in terms of suspended particulate matter and sulphur dioxide production

## MAJOR INITIATIVES TAKEN FOR AIR POLLUTION CONTROL IN INDIA (DURING LAST TWO DECADES)

- National ambient air quality standards based on health impact evolved (1982, 1994).
- Emission standards for air polluting industries developed for major industries
- Implementation of standards in 17 categories of highly polluting industries and other small/medium scale industries (stone crushers, brick kiln, re-rolling mills, etc.).
- Action plan implementation and pollution control in identified 24 problem areas.
- Improvement in vehicular technology (Euro-1, Euro-2, CNG vehicles, 4 stroke engines, etc.).
- Improvement in fuel quality - diesel with low sulfur content (0.25 in whole country and 0.05 in metro cities)
- Gasoline - lead phased-out throughout the country since 2000
- Pollution Under Control (PUC) certificate for all vehicles
- All commercial vehicles to operate on CNG in Delhi
- Coal beneficiation/clean coal technology –notification regarding use of beneficiated coal in T.P.P.
- Air Quality Monitoring at National Level (295 stations spread over 93 cities)
- Air Quality Index for public Information
- Air Quality Data on TV channels and daily news papers for public awareness



# EMERGING NEW AREAS FOR AIR POLLUTION CONTROL IN INDIA (1/2)

- Development of Low Cost ash removal technology from Coal and promotion of Clean Coal Technologies (IGCC, PFBC, etc.)
- Technology for reduction of Fluoride emission (primary & Secondary) from pot room of Aluminium Industries using Soderberg Technology
- Development of NOx control Standard for Thermal Power Plants and Refineries
- Prevention and control of Fugitive Emission in Cement Industry, development of good practice guidelines
- Use of high calorific value Hazardous Waste including Petroleum Coke in Cement Kiln
- Low Cost Flue Gas Desulphurization Technology for Thermal Power Plants
- Technology Development of Fugitive Emission Control from Coke Oven Plants of Iron & Steel Industry (PLL,PLD)
- Development of Technology and Standard to control emission of VOC, Methyl Chloride, P2O5, HCl etc. from Pesticide Industry
- Development of Odor Control Technology for Paper & Pulp industry and Standardization the method of odor measurement
- Fluidized Bed Combustion (FBC/CFBC) technology for Solid Fuel containing Higher Ash
- Low Cost Flue Gas Desulphurization Technology for Thermal Power Plants
- Technology Development of Fugitive Emission Control from Coke Oven Plants of Iron & Steel Industry (PLL,PLD)



## EMERGING NEW AREAS FOR AIR POLLUTION CONTROL IN INDIA (2/2)

- Development of Technology for low cost Catalytic Converter.
- Technology for NOx / HC control from large Stationary Diesel Engine.
- Development of improved design of Incinerators for Hazardous Waste.
- Control on emission of Fine Particulate Matter (PM 2.5) from Engine using LPG,CNG, Low Sulphur Diesel, Low Sulphur Petrol etc.
- Apportionment Study for Fine Particulate Matter (PM10, PM2.5) in major cities
- Technology for Mercury Emission Control from Thermal Power Plants.
- Development of methodology for measurement of hazardous Organic Compounds.
- Development of Calibration Laboratory for Calibration of Air Quality Analyzers in Regional Labs. of CPCB.
- Noise and Emission Control System for Small DG Sets (<200 KW)
- Development of Stack Height Guidelines for Thermal Power Plants and Industries using ventilation co-efficient of different regions in the country.



# ANNEXURE 1 - LIST OF KEY SMALL SCALE POLLUTING INDUSTRIES

- Arc Furnace
- Bagasse Fired Boilers
- Battery Manufacturing Unit
- Beehive Hard Coke Oven
- Briquette Industry (Coal)
- Boilers (Small)
- Brick Kilns
- Ceramic Industry
- Coke Ovens
- Cupola Furnace
- Foundries
- Hot Mix Plants
- Lime Kilns
- Soft Coke Industries
- Stone Crushing Unit

## ANNEXURE 2 - LIST OF KEY INDUSTRIES WHERE AIR POLLUTION CONTROL IS ENFORCED BY STATE POLLUTION CONTROL BOARD (SPCB)

- Aluminium Industries
- Asbestos Products
- Carbon Black Industries
- Calcium Carbide Plant
- Cement Industries
- Copper, Lead and Zinc Smelting
- Coal Mines
- Coal Washeries
- Glass Industries
- Integrated Iron & Steel
- Nitric Acid Plants
- Oil Refineries
- Oil Drilling and Gas Extraction Industry
- Sulphuric Acid Plants
- Thermal Power Plant – Coal Based
- Thermal Power Plant – Gas Based
- Stand alone Coke Oven Plants



## ANNEXURE 3 - LIST OF MAJOR ACTS IN INDIA FOR AIR POLLUTION CONTROL

- Air (Prevention and Control of Pollution) Act , 1981
- Environmental Protection Act, 1986
- Factory Act (Occupational Health) 1987



## ANNEXURE 4 – LIST OF CONTACTS OF MAJOR AGENCIES IN AREA OF POLLUTION CONTROL

- **Central Pollution Control Board, India**  
ENVIS - Centre for control of pollution  
Parivesh Bhawan, CBD-cum-Office Complex  
East Arjun Nagar, Delhi - 110 032  
India  
Phone – 91 11 22307233  
<http://www.cpcbenvis.nic.in>
- **The Energy and Resources Institute (TERI)**  
Darbari Seth Block, IHC Complex, Lodhi Road, New Delhi - 110 003, India  
Phone - 91 11 2468 2100 and 41504900  
<http://www.teriin.org>
- **The CII-ITC Centre of Excellence for Sustainable Development**  
2<sup>nd</sup> Floor, Thapar House, 124, Janpath,  
New Delhi 110001  
Phone - 91 11 4150 2309  
[www.sustainabledevelopment.in](http://www.sustainabledevelopment.in)