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Opportunities for Collaboration in Environmental Sector

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Opportunities in Environmental Sector

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- Opportunities in different Sectors

Opportunities in Environmental Sector




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About EMC

- EMC was established in 1996
- It is a consulting organization in environmental and social domain and provides services that are essentially strategic, knowledge driven and supported through research and training
- EMC has since its inception completed more than 300 assignments for clients in India as well as overseas
- Clients represent Governments, UN Agencies, Corporates, Industries, Industry Associations, Financing Institutions as well as Community Based Organizations.


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EMC Services

Focus Areas


- Climate Change Advisory & Energy
- Eco-Cities & Eco-Villages
- Sustainability Appraisal
- Sustainable Production & Consumption
- Waste Management
- Remote Sensing & GIS
- Knowledge Management & Networks
- Environmental & Social Governance at Financial Institutions



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- Conduct of Environmental Site Assessment and Compliance Audit for mult...
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News & Downloads

- Jun 06, 2015
- Business and Sustainability Short Course 2015
- May 25, 2015
- M/s Infrastructure Development Corporation (Karnataka) Ltd., have appoi...
- Apr 28, 2015
- Dr. Modak invited as one of the judges for the 2015 Environmental Chal...



Partnerships with Chamber of Commerce & Consulates: Projects & Capacity Development

- Development of **Indo-Swedish Knowledge Facility (IKF) on Environment** for Swedish Consulate. IKF focused on partnership between business and academia of India and Sweden in the realm of sustainability, technology being the focus
- Field Assessment and Counseling for **Royal Netherlands Embassy** – The Jetpur Textiles project that focused on Cleaner Production
- Capacity Development Workshops & Conferences with **Indian Merchants Chamber** on Renewable Energy, with **Bombay Chamber of Commerce and Industries (BCCI)** on Sustainability, Environmental Due Diligence in Pharma Sector etc.
- Newsletter on Sustainability** with BCCI (last 4 years)



Opportunities in Environmental Sector

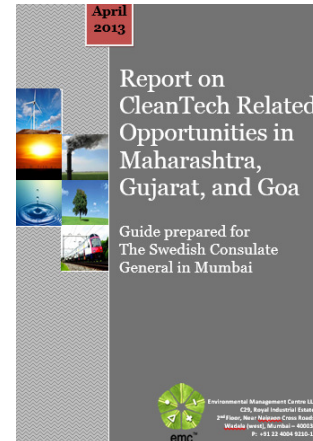
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Projects on Cleantech (Illustrative)

- Study on Cleantech related opportunities in three States of India for **Swedish Consulate** (2013). This study was followed by another focused work on CleanTech for Hospitality Sector in the State of Goa
- Cleaner Production(CP) Assessment for the Chemical Industries in Gujarat State aimed at identification of initiatives to foster CP investments for **International Finance Corporation** (2009)
- Development of Green Productivity Manual for **Asian Productivity Organization, Tokyo** (1999-2000), Cleaner Production Companion for **UNEP DTIE, Paris** (2002)
- Development of Framework for Sustainability Assessment of Technologies (SAT) for **UNEP International Environmental Technology Centre (IETC), Osaka**



Opportunities for Collaboration in Environment Sector

Background: Indian Scenario

- Indian economy on the rise (average 7% since 2000) and estimated to be US\$ 5 trillion by 2025
- New regulations, trade liberalisation, increased privatisation are driving the market in India.
- 12th five year plan (2012- 2017) focuses on sectors such as rural infrastructure, energy, water and wastewater.
- India is partner to a number of international agreements on environmental issues
- *PM's Flagship National programs related to Environment*

Flagship Programs in India

- 100 Smart Cities
- Atal Mission for Rejuvenation and Urban Transformation (AMRUT)
- Housing for All
- Delhi-Mumbai Industrial Corridor
- Clean India Mission - *Swatch Bharat Abhiyaan*
- National Mission for Clean Ganga



MODI'S 'SMART' VISION TAKES SHAPE

The urban development ministry has identified almost all the places where the NDA's 100 smart cities will come up

SMART CITIES
WHAT THEY ARE AND HOW THEY WILL HELP

- Smart cities, in the most basic terms, are urban settlements that exploit technology to offer more structured and hospitable living conditions for residents.
- Information and Communication Technology (ICT) forms the backbone of smart cities and is the main tool to address common problems like congestion and waste of energy.
- Such cities have a centralised control system which provides real-time inputs on availability of water, electricity, public transport, healthcare and education.
- Intelligent communication tools enable administrators to manage and respond to emergencies faster.
- Consumption of scarce resources like water and energy is streamlined through the use of technology.
- Better energy management systems help people automate energy-consuming systems in buildings.
- There is emphasis on the use of renewable sources of energy.

INTELLIGENT TRANSPORT

- Smart cities have an integrated transit corridor, where Bus Rapid Transit corridors as well as suburban train networks are linked with pedestrian and cycle lanes. Furthermore, there are pods to carry people directly from point to point, with no stop at intervening stations.
- Smart cards facilitate travel in multiple modes of public transport.
- Real-time transport displays can provide visibility and information on availability of public transport as well as the condition of traffic on routes.
- Digital parking meters send information to mobile phones when a space opens up.

THE PRIME MINISTER'S DREAM PROJECT

- The Narendra Modi government plans to build 100 smart cities across India and made an allocation of ₹7,000 crore to this end in the Budget 2014-15.
- Cities such as Delhi, Hyderabad, Surat, Coimbatore, Bangalore, Mangalore, Jamshedpur, Mumbai and Chennai have launched initiatives for deployment of advanced communications systems, Metro networks, traffic management frameworks, smart meters, GPS for solid waste management, online water quality monitoring, online building plan approval schemes, etc.

Seven smart cities are being developed by states with foreign assistance as part of the Delhi-Mumbai Industrial Corridor (DMIC); work has already begun.

Seven smart cities each will be built in Rajasthan, Gujarat, Karnataka and Kerala.

Opportunities in Environmental Sector

Real time Data Management

Information & Communication technology

Renewable Energy

Sustainable Transport

Green Buildings

Reduced consumption of resources

Water & Waste Management

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Constraints

- Supply side such as non-availability of energy
- Dependence on Monsoon
- Water Scarcity
- Land acquisition for industry and infrastructure development
- Capacity of Government officials
- Lack of funds at MSMEs level

Opportunities in Environmental Sector

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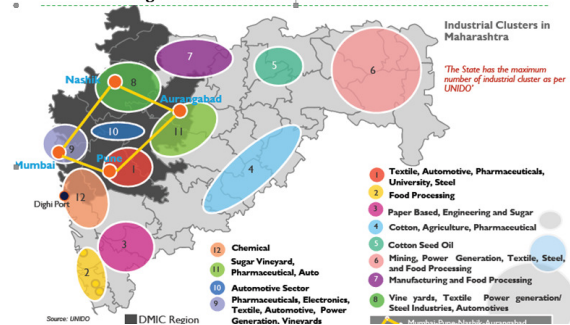
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Key Growth Segments for CleanTech Business Investments - 3 States

Recommendations from the Study conducted by EMC

- Renewable Energy & Energy Efficiency
- Transportation
- Water Treatment and Conservation
- Wastewater Treatment
- Waste Management
- Environmental Goods and Services (Green products)

Figure 6: Industrial Clusters in Maharashtra



Key Growth Segments for CleanTech

Recommendations by Planning Commission on 12th Five Year Plan

- Green Products
- Green Buildings
- Sustainable Environment Management in MSMEs – Air, water and waste management
- Environmental Regulatory Reforms
- Organized Waste Management and Recycling Industry
- Green and Clean Technology Fund





Mapping with Italian Industries

- Green products
- Water & Waste water technologies
- Waste Management
- Green buildings
- Sustainable Environment Management in MSMEs



Green Products

Background

- MoEF & CC is currently developing a framework & guidelines for defining specifications for green products
- Green Purchasing Network of India (branch of IGPN)
- The Green People of India (association of Green entrepreneurs)
- High rise in health issues – creating awareness on organic and green products.



Opportunities

- Promoting Green Public Procurement - demand for green products can be created through government procurement.
 - *Govt itself is the largest purchasers of consumables and office equipment*
- Joint effort by Government and Industry Associations to promote green products.
- Promote green entrepreneurs and support export and import of green products





Water and Waste Water Treatment



Background: Wastewater

- A survey by the Central Pollution Control Board (CPCB)
 - *About 26,254 million litres per day (ML/d) of wastewater is generated in the 921 Class I & Class II cities in India (housing more than 70% of urban population).*
 - *The municipal wastewater treatment capacity developed so far in India is about 7,044 ML/d - accounting for 27% of wastewater generation in these two classes of urban centres.*
 - *Treatment of waste water is less than 30% of their sewage and discharge 26.5 million m³/day of untreated wastewater into rivers and coastal waters.*

Background

- India is looking for public-private-partnership initiatives to boost the pipeline of water and wastewater projects.
- With more cities expected to bring in projects into the market, there is an opportunity for investments in water and wastewater technologies



Opportunities

- The **Municipal water supply** project market is sized at \$147 million and growing at 18% per annum
- The **Municipal wastewater** market is sized at \$ 414 million and also growing at 18% per annum. (Presently supported by JNNURM & UIDSSMT – National programs on Urban development)
- The **Industrial** market (including large and small applications) is worth \$ 4500 million and should grow to over \$12,320 million in next 2-3 years.
- **Seawater desalination** market is sized at \$133 million. A few projects awarded may swing the market size in a year up-and-down, but the general market growth should be at 7 to 8%.

Note: Base year of study is 2013, conducted by Canadian Consulate

Opportunities: Desalination

- Sea water desalination is opening up in India
 - *The two large 100 MLD desalination plants in Chennai*
 - *Small sized more than 180 desalination plants*



Desalination Plant in Minjur, Tamil Nadu

- India desalination water market is expected to reach a capacity of 5.35 million cubic metres per day by 2018.
- There is a good opportunity for medium-sized desalination plants (25 to 50 MLD) range in the power and refining sectors for many projects which are located in the coastal area.

Opportunities: Desalination

- The **National Water Mission** is one of the eight National Missions which form the core of the National Action Plan on Climate Change, also aims to conserve water, minimize wastage and seeks to **ensure that water requirements of coastal cities with inadequate alternative sources of water are met through adoption of desalination technologies.**





Other Opportunities

- Growing demand for technological advancements in equipment for
 - clarification, sludge treatment, aeration, disinfection and filtration.
- Opportunities for water efficient technologies-
 - *Recycling and reuse of grey water for agriculture and groundwater recharge*
 - *applications for reuse of municipal wastewater in industry*
 - *residual waste treatment (waste to energy)*
- Smart metering and remote monitoring of water / water treatment plants



Waste Management

Background

- India is producing 68.8 million TPY (tonnes per year) of municipal solid waste or 188,500 TPD. It is estimated to be five fold increase in the generation figures by 2041 - 230 million TPY (630,000 TPD).
- The total solid waste market in India is worth approximately \$2 billion.
- Although traditionally Indians segregate – paper, plastic cans and other consumables but day to day household waste is not segregated.



Background: E-waste

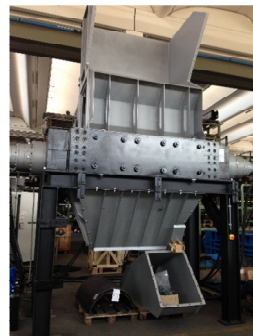
- India contributes to 0.8 million tonnes annually out of 40-50 million tonnes of e-waste globally.
- There are only 23 formal recycling facilities in India.
- E-waste constitutes 2% - 5% of total solid waste and 25% of which is toxic waste.
- By 2020, e-waste generated by computers alone will increase by 500% in India.





Opportunities

- Waste to energy plants and their automation
- Technologies & Equipment segregating and shredding the wastes



Green Buildings



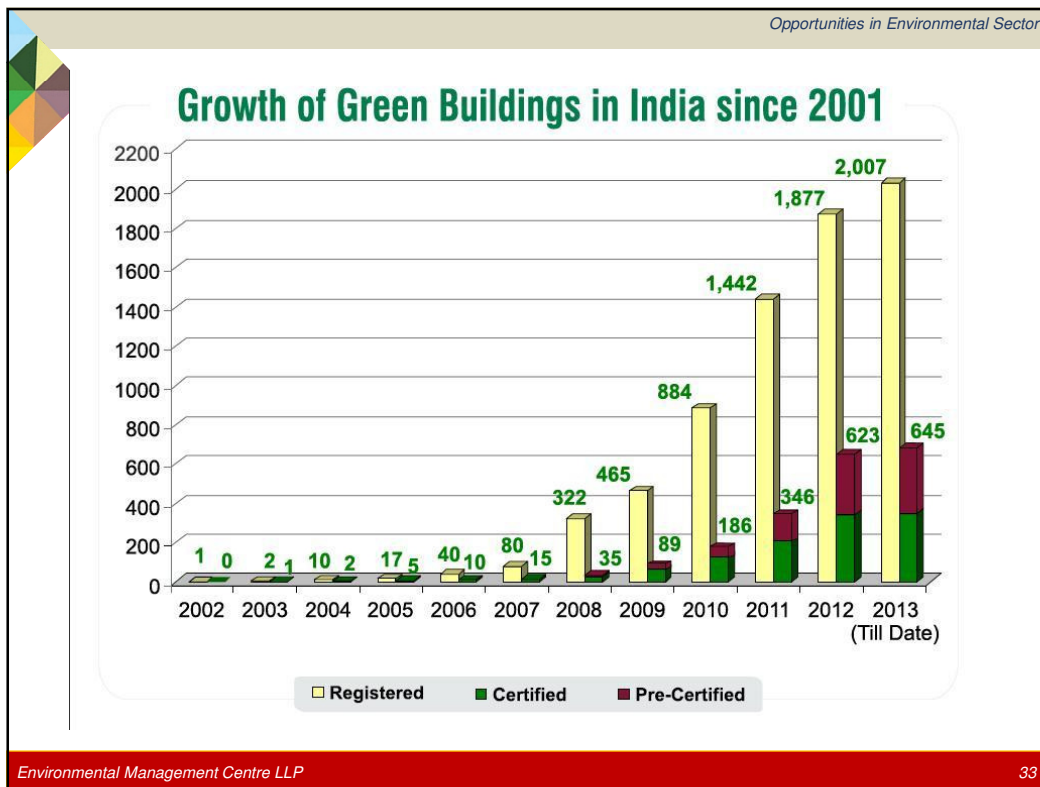
Background

- The urban population is predicted to rise to 550 million by 2030 or 42.0% of the total population.
- Urban growth combined with rapid growth in the country puts enormous pressure on housing requirements, urban infrastructure and services.
- Buildings in India consume about 20% of the country's total electricity and have a significant impact on the environment and resources indicating the need to develop green buildings in India.



Background

- The two green building rating systems in India are LEED by IGBC and GRIHA by TERI.
- LEED is most popular among the ratings and the credits earned through LEED ratings can be traded in the carbon market.
- The government has launched the Energy Conservation Building Code (ECBC) under the National Building Codes and Standards to promote green buildings in India.



Opportunities in Environmental Sector

Opportunities

- India is expected to develop about 110 million sq ft of green space in the next few years.
- In the next 3-4 years about 200 million sq ft. of commercial space and 45 million of retail space is expected to be constructed across the major cities of India
- IGBC Stats:
 - Between 2003-2010 – IGBC rated buildings approx. 1 billion sq ft.
 - Till 2013 – 1 billion sq ft added
 - Last year – another 1 billion sq ft added
 - Target – 10 billion sq ft by 2020

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Opportunities in Environmental Sector

Opportunities

- The residential sector offers tremendous opportunities to reduce energy & water consumption.
- The Indian market has a huge potential estimated to about \$365 million to develop green building materials and equipment.



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Environmental Management in MSMEs

Background

- MSMEs are an integral part of the Indian industry which contributes 8% of the country's GDP, 45% of the manufactured output and 40% of the country's exports.
- MSMEs can have a significant impact on the environment as they are generally liable to be equipped with obsolete, inefficient and polluting technologies and processes.
- 70% of the total industrial pollution load of India is attributed to MSMEs. The cost of environmental damage has been estimated at approximately \$32 billion (*identified by the National Productivity Council of India*).

Opportunities: Cleantech in MSMEs

- **Technology Support Programmes:**
 - *The technology/ know-how used in MSMEs is not the creation of MSMEs; it comes embedded with plant and machines they buy. In vast majority of cases, the source remains the domestic suppliers.*
 - *Innovative and cost effective technologies such as solvent recovery equipment*
- **Financial Assistance:**
 - *Access to finance remains a major concern*
 - *Buying plants for the purpose of environmental compliances that do not contribute to production is not economical*
 - *Fear among MSME entrepreneurs that technological up-gradation costs could render the unit uncompetitive*



Opportunities in Environmental Sector

Other Collaboration Opportunities

- River Rejuvenation, especially targeting non-point source pollution
- Green Tourism
- Research & Development
- Capacity Building



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Opportunities in Environmental Sector

Suggestions for Engagements



- Identify Focus areas based on Indian National Missions & Priorities and Italian Expertise
- Design exposure events, joint seminars, student/faculty exchange, a dynamic collaborative web portal
- **Set up Indo-Italian Knowledge Facility on CleanTech (on lines of the Swedish Facility) to ensure systematic and sustained business collaborations**

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