



# CHALLENGES & OPPORTUNITIES IN RENEWABLES, ENERGY EFFICIENCY AND ENVIRONMENTAL PROTECTION:

## Indian needs assessment



European Business and Technology Centre

*Enhancing EU-India Collaboration in Clean Technologies*

the **INDO-ITALIAN** Chamber  
of COMMERCE and INDUSTRY 



**CENTRO ESTERO INTERNAZIONALIZZAZIONE  
PIEMONTE** Agency for Investments, Export and Tourism  
Promoted by Regione Piemonte and Chambers of Commerce

# Renewable Energy and Energy Efficiency in India: an Overview



# India - Economic Macro Indicators

Indicator	Figure	Est. Year	Data Source
Surface (km <sup>2</sup> )	3,287,263	-	CIA Factbook
Population (absolute numbers)	1,236,344,631	2014	CIA Factbook
Population density (people per sq. km)	376.10	2014	CIA Factbook
Share of urban population	368,608,912	2010	Trading Economics
Share of rural population	856,005,415	2010	Trading Economics
GDP (Purchasing Power Parity in bn EUR)*	3749.25	2013	CIA Factbook
GDP per capita (Purchasing Power Parity in EUR)	3,000	2013	CIA Factbook
GDP real annual growth rate (%)	3.2%	2013	CIA Factbook
Human Development Index Value	0.586	2013	UNDP
Rank in Ease of Doing Business (Total 189)	140	2014	World Bank
Share of Official Development Assistance in GDP (% of GNI)	0.1	2012	World Bank
Consumption of electricity per capita kWh/month	917.2	2013	CEA

\*Exchange rate used is USD1 = EUR 0.75

# India Macro Indicators – Energy Sector\_1

Total Gross Electricity Production in 2014: 1,174 TWh

Total Electricity Consumption in 2014: 939.7 TWh

Increasing electricity demand: 1,915 TWh over FY07-22. (CAGR of 9%)

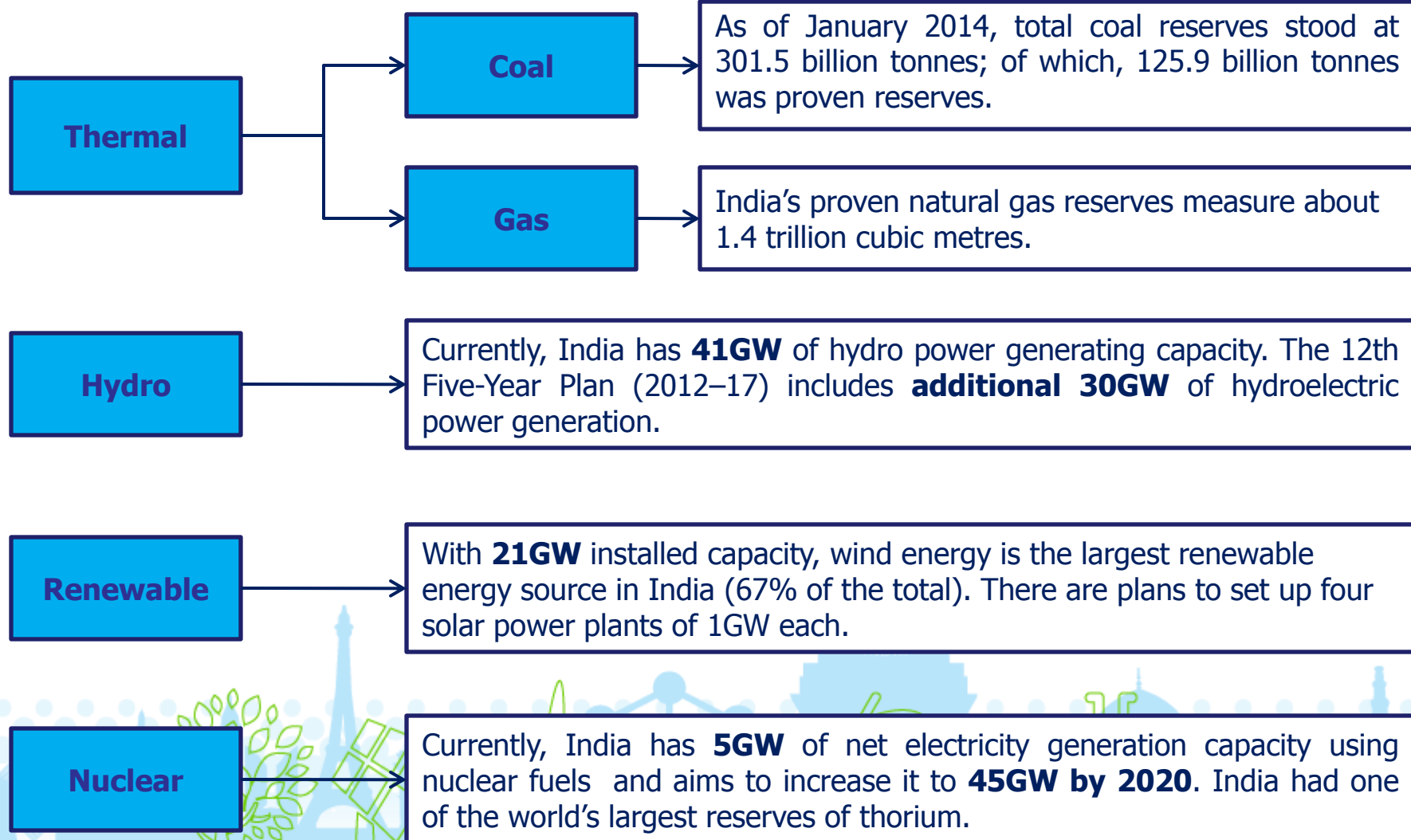
Investments planned for the 12<sup>th</sup> FYP: 200 bln EUR.

India is the **3<sup>rd</sup>** largest producer and **4<sup>th</sup>** largest consumer of electricity in the world.

Still **400 million people** do not have access to electricity. Of these, over **90% residing in rural areas** form the biggest market segment for off-grid energy services.



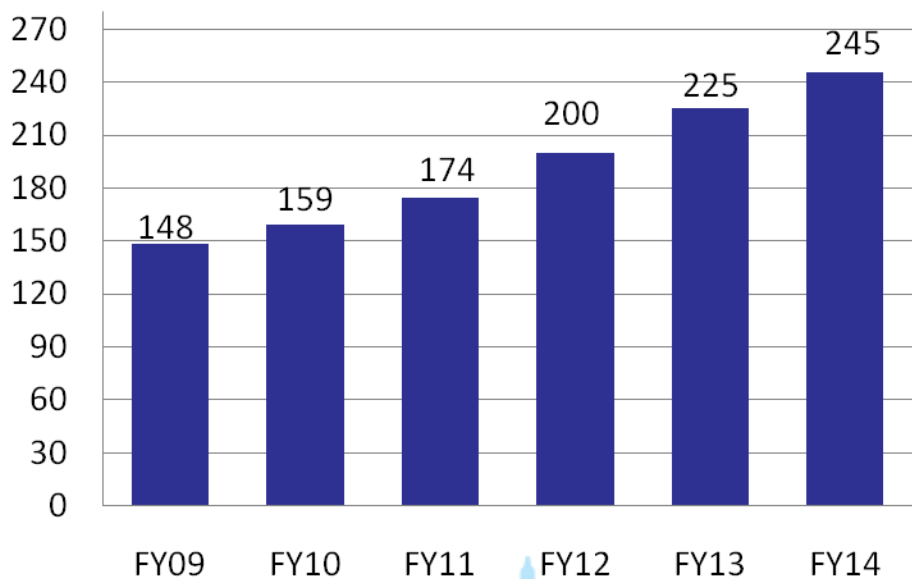
# India Macro Indicators – Energy Sector\_2



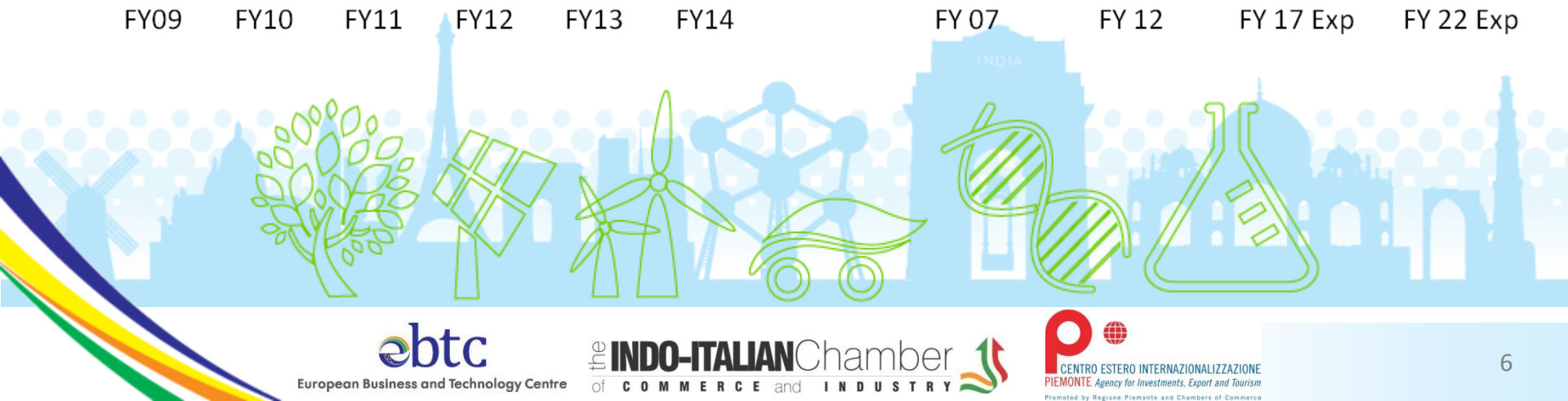
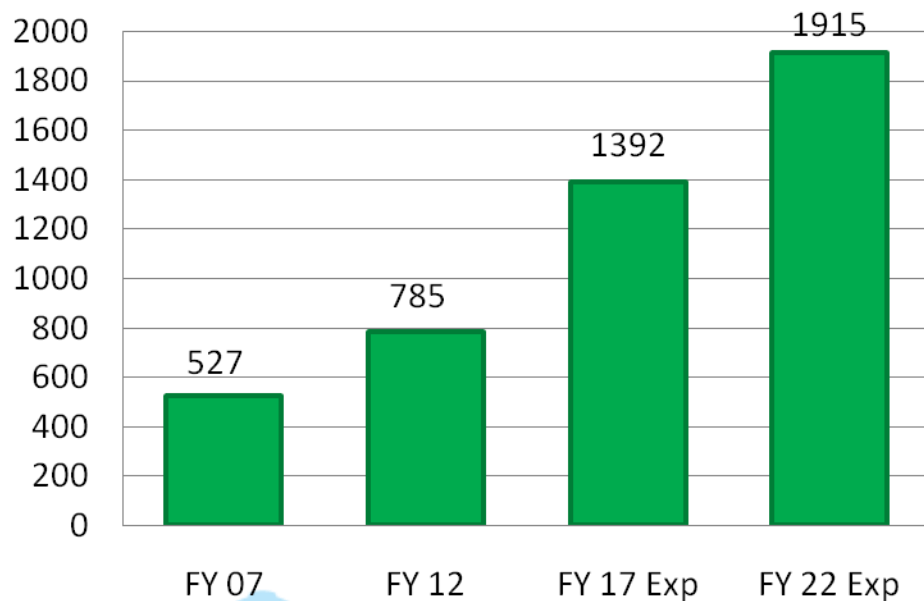


# India Macro Indicators – Energy Sector\_3

## Installed electricity generation capacity (GW)

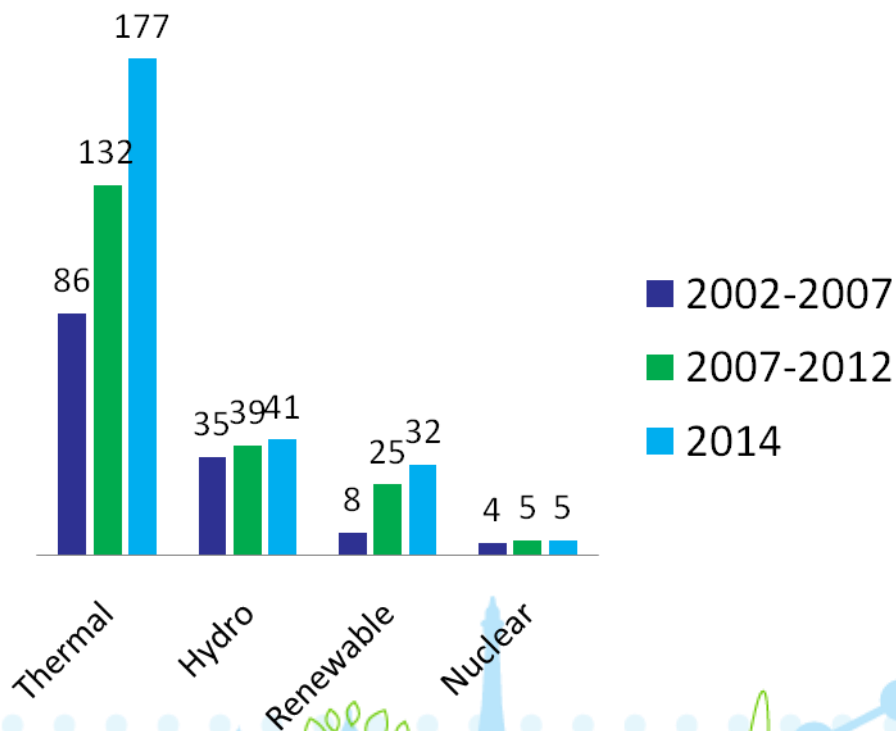


## Electricity Demand with Forecast (GW)

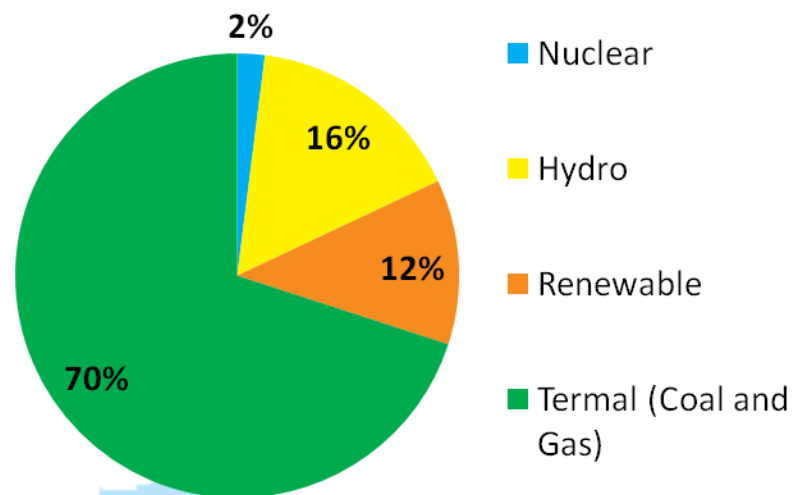


# India Macro Indicators – Energy Sector\_4

## Comparison of installed capacity (GW)



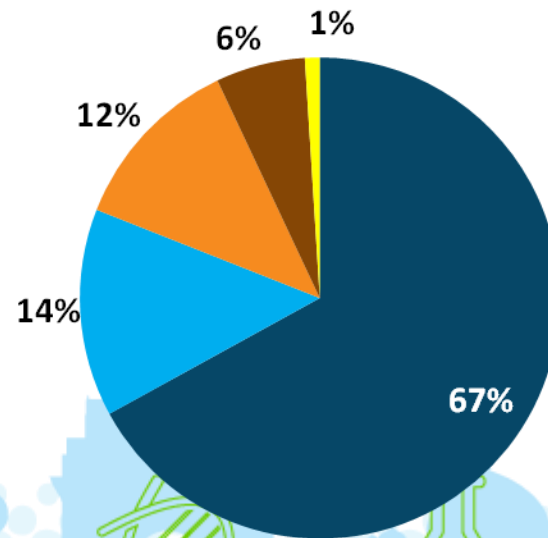
## Source of power with shares



# Renewable energy fast emerging as a major source of power

- Renewable Energy installed capacity: **32 GW** → 12% of the total
- Renewable energy capacity additions planned: **41 GW** till 2017
- Biomass: 12% per cent of total installed capacity in renewable energy.
- Solar energy: 1% per cent of total renewable energy installed capacity.
- The country's true potential for solar power stands at an estimated 5,000 TWh per annum
- Small Hydro installed capacity: 6.8 GW in 2013

## Shares of Renewable Energies sources





# Indian Flagship programs

## Opportunities

- 100 Smart Cities
- Affordable Housing
- Delhi-Mumbai Industrial Corridor
- Clean India Mission
- National Mission for Clean Ganga River

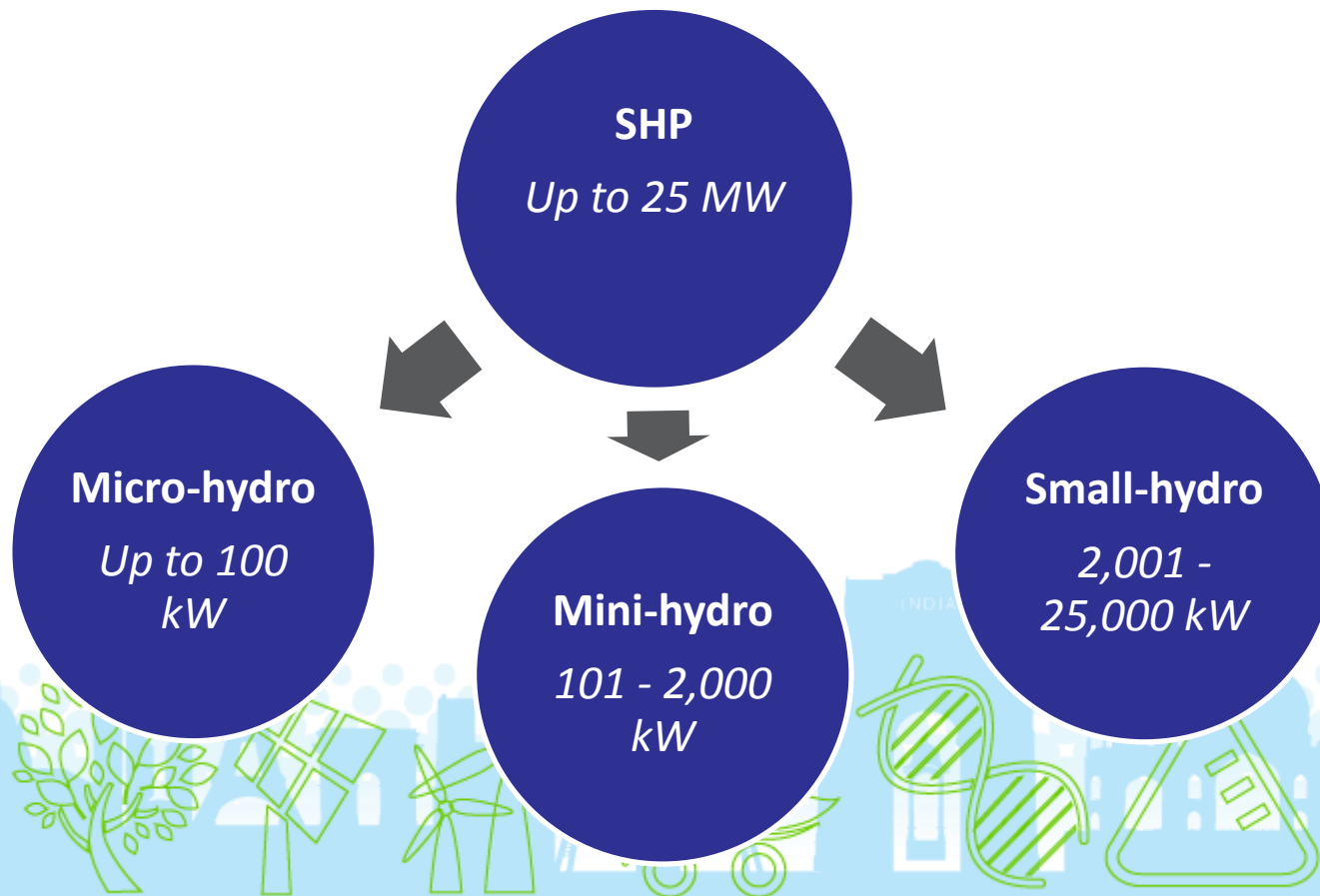
## Constraints

- Herratic Supply of Power
- Dependence on Monsoons
- Land Acquisition for industry and infrastructure development
- Public bodies' capacity
- Project financing



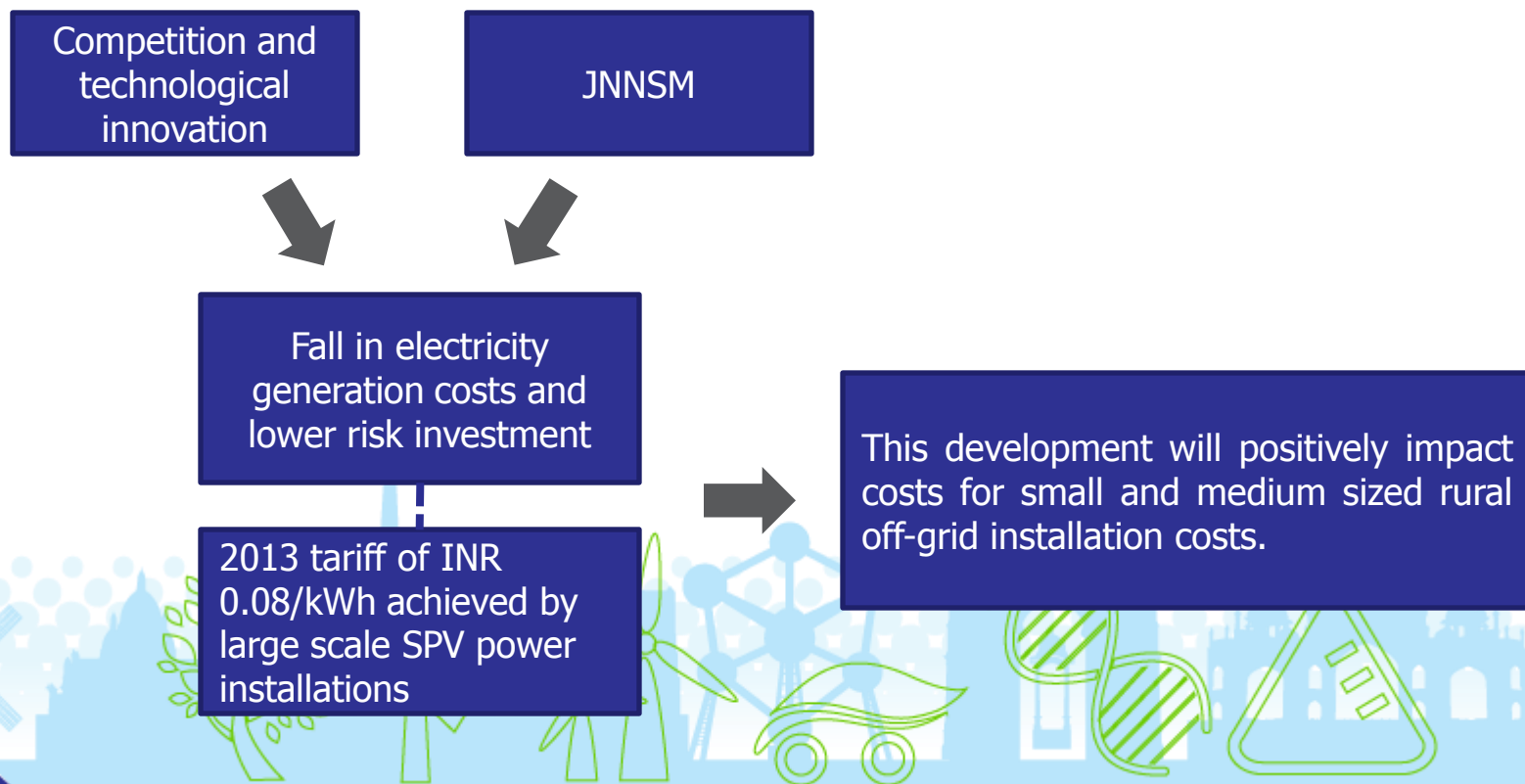
# Opportunities - Small Hydropower (SHP)

With a proportion of about 90% water to wire, hydro power has one of the best conversion rates. SHP requires small capital investment and takes less effort to construct and to integrate into local environments. Since SHPs are site dependent (predominantly along a river), they do not have issues associated with submergence and rehabilitation. SHP projects in India are up to 25 MW.



# Opportunities - Solar Photovoltaic Power

India is currently in the second phase of its policy to make solar applications of different sizes work efficiently in the country. After the **Jawaharlal Nehru National Solar Mission (JNNSM)** launched in January 2010, which mainly aimed at large scale solar technology across India with a targeted installation of 20 GW in aggregate until 2022.



# Small Wind Power

The **Small Wind Energy and Hybrid Systems (SWES)** Scheme, last modified by the ministry of New and Renewable Energy in 2010, aimed at technology development and promoting applications of water pumping windmills and aerogenerators/wind-solar hybrid systems called the 'Small Wind Energy and Hybrid Systems (SWES)'. This scheme provides financial support for setting up these systems, field trials and performance evaluations, grid connected SWES for demonstration, and R&D. This program aims at boosting the Small Wind Turbine (SWT) market by involving system manufacturers.

- Current installed capacity 21.1 GW highest proportion in India's renewable energy mix.
- The installable potential at 50 m level is calculated to be 49.1 GW based on 0.5% land availability of Himalayan states, North-eastern states and Andaman and Nicobar Islands and 2% land availability of all other states





European Business and Technology Centre



## Environmental Protection in India: An Overview





# Key Environmental Issues



Solid Waste and  
Land Degradation



Water management,  
including water  
pollution



Air pollution



# Environment Authorities & Policy and Regulation Landscape

## Regulatory and administrative bodies

- The Ministry of Environment and Forestry (MoEF);
- Pollution Control Boards, namely the Central Pollution Control Board (CPCB) and the State Pollution Control Boards (SPCBs);

## Policy Framework

- Policy Statement for Abatement of Pollution and the National Conservation Strategy and Policy Statement on Environment and Development (1992): to develop and promote initiatives for the protection and improvement of the environment;
- EAP (Environmental Action Programme) 1993: improving environmental services and integrating environmental considerations in to development programmes;



# Land Degradation & Solid Waste

## Main Causes of **Land Degradation**:

- India has 0.5% of the world's grazing area but has over 18% of world's cattle population;
- Steady growth of human population India supports approximately 17.3% of the world's human population and 20% of the world's livestock population on merely 2.5%;
- Deforestation: cutting beyond permissible limits, unsustainable fuelwood, shifting cultivation, inadequate soil conservation measures, indiscriminate use of agro chemicals;

As much as 105.19 million hectares (Mha) of the country's total geographical area of 328.73 Mha is being degraded, while 82.18 Mha is undergoing desertification.

Management of **Municipal Solid Waste (MSW)** continues to remain one of the most neglected areas of urban development in India:

- Estimated Solid Waste Production: 115,000 tons per day.
- Estimated average SW generation rate : 0.4 kg per capita per day
- Estimated annual increase in per capita waste quantity: 1.33% per year
- Estimated total annual increase: 5%.

Then waste management market is expected to be worth **12.17 billion EUR** by 2025. Indian (MSW) management market is expected to grow at a **CAGR** (*Compound Annual Growth Rate*) of **7%** by 2025. E-waste management market is expected to grow at a **CAGR of 10%** during the same period.

# Water Pollution

- Almost 70% of Indian surface water resources contaminated by biological, toxic, organic, and inorganic pollutants
- main cause for contamination : discharge of domestic and industrial wastewater in water bodies mostly in an untreated form from urban centers
- Water management is becoming extremely complicated for **3 main reasons**:

## Difficult Rain Harnessing

More than 60% of India's irrigated agriculture and 85% of drinking water supplies are dependent on groundwater.

## Climate change

Intensify monsoon, glacier melting, and flooding will further exacerbate India's "difficult hydrology".

## Water Consumption

- Agricultural Irrigation has brought to the depletion of at least 60% of water tables.
- Industrial consumption can be estimated to be minimum 6% of the total, though there are no reliable and organized statistic
- Approximately 80% of the water used in steel plants is discharged as effluent and not recycled.

# Air Pollution

- Carbon Dioxide Emissions: 1.18 ton per capita → low in comparison to the world average of 5.3 tons per person.
- India is still the third largest polluting country accounting for the 5.7% of global CO2 emissions.
- About 65% of CO2 emissions in 2013 was from heating, domestic uses and power sector
- About 9% of emissions were from transportation (cars, trains, two wheelers, airplanes, others).

## Main causes:

- Rapid Industrialization
- Energy Production
- Fuelwood and Biomass Burning
- Commercialization
- Fuel Adulteration
- Urbanization

In 2014 854~million people used **fuelwood**, for a total amount of 216 million tons.  
Average Annual per capita consumption of fuelwood: 206 kg coal equivalent.

**Vehicles and fuel adulteration** are the two other major sources of pollutants in cities and towns: adulterated fuel increases tailpipe emissions of hydrocarbons (HC), carbon monoxide (CO), oxides of nitrogen (NOx) and particulate matter (PM).





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Agency for Investments, Export and Tourism

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## Indian Needs Assessment

**CHALLENGES & OPPORTUNITIES IN  
RENEWABLES AND ENERGY  
EFFICIENCY**

**MANAGEMENT AND TECHNOLOGIES  
FOR ENVIRONMENT PROTECTION:  
waste, water, air and soil**



# An overview

## Final OBJECTIVE

To encourage the **adoption of cleantech solutions in India** in energy and environmental protection related fields, by drawing from a mix of European best practices and innovative solutions that will be identified.

## Subjects involved

- European Business and Technology Centre (**EBTC**)
- The Indo-Italian Chamber of Commerce and Industry (**IICCI**)
- Piedmont Agency for Investments, Export and Tourism (**CEIP**)

## The way ahead

- Highlight Indian needs of cleantech solutions in energy and environment sector;
- Assess and map the European cleantech offer available to meet the needs of Indian market;
- Encourage and support the implementation of commercial, industrial and technological cooperation projects between EU and India players;

# Methodology

## Dual methodology approach:

- Survey through circulation and collection of a **questionnaire** among sector related companies;
- **Direct contact** with the relevant stakeholders: Private companies, Associations, Public Institutions, Research Institutes, Universities.

## Target sectors- Energy

- **Renewable Energy:** Solar, Wind, Small Hydro, Biomass, Biogas, Geothermal, Marine Tidal, Wave, Fuel Cells, Waste to Energy, Cogeneration, Clean coal, Biofuels;
- **Energy Efficiency:** Energy Storage, Smart grid, Smart Buildings, Energy Management Systems, Efficient devices, Batteries, Thermal storage, Mechanical storage, Ultracapacitors, Hydrogen.

Reached over **5000** private and public Indian entities

**Regions:** North, North-East, West, South-East, South-West

**26 Business Leads:** 7 photovoltaic, 7 water management, 4 waste management, 2 biomass, 2 miscellaneous and 1 respectively for biogas, co-generation, energy management, wind

## Target Sectors – Environment:

**Environment protection:** Waste management, Water supply, Sanitation and wastewater treatment, Land degradation, Air pollution, Municipal solid waste, Hazardous waste, Biomedical waste, E-waste, Environmental pollution, Waste to energy technologies, Vermi-composting, Bioremediation, Environmental biotechnology, Environmental genomics unit, Environmental impact, risk assessment, system design & modeling, Geo-environmental management.

# RENEWABLES AND ENERGY EFFICIENCY – Business Opportunities\_1

## BIO-GAS

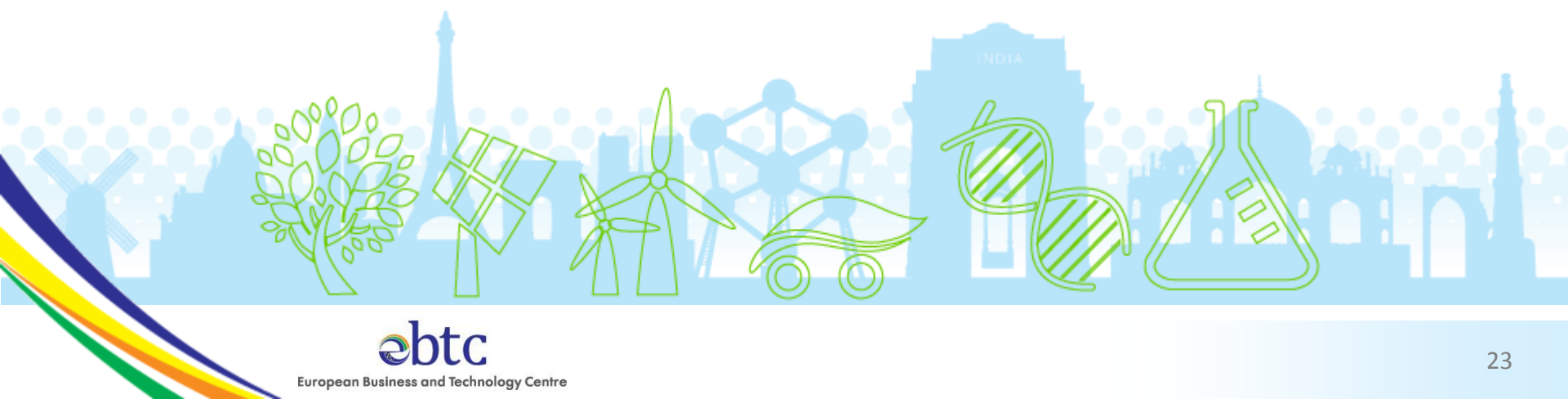
Code ENE BGAS01	Company Profile	The company is a global biogas company dedicated to providing innovative renewable energy solutions for the organic waste management and agriculture sectors with operations in USA and India. Currently the company is working in the area of bio gas to bio CNG from sugar cane waste in the states of Maharashtra and Uttar Pradesh and is of the opinion that there is a huge market potential in it since the Government of India is pushing to make this fuel as a transportation fuel.
	Needs Assessment	Currently majority of Indian companies are using <b>water scrubbing methods to remove CO2 and H2S from bio gas</b> . They are looking for better technology which is energy efficient and could also minimize the loss of methane.

## BIOMASS ENERGY

Code ENE BMAS01	Company Profile	The company is a leader in process efficiency and energy conservation for Process Industry, with over seven decades of experience building steam engineering and control instrumentation solutions with presence in over 50 locations globally and 5 manufacturing facilities
	Needs Assessment	<ol style="list-style-type: none"><li>1. In biomass combustion the company is looking for solution <b>to streamline the quality / calorific value of various fuels</b> like biomass briquettes, saw dust, spent grain, rice husk, bagasse, wood chips, coconut shell, palm oil waste, coal and many more that are used to generate energy.</li><li>2. Commercial large scale technology for “<b>Decentralized electrical power</b>” generation through renewables majorly catering to rural electrification and off grid energy supply</li><li>3. Gasification technologies to reduce/eliminate the Phenols/Tars which are essentially carcinogenic</li><li>4. Apart from this anything in the field of Steam systems, steam utilization, distribution, which has increased plant efficiency</li></ol>

## RENEWABLES AND ENERGY EFFICIENCY – Business Opportunities\_2

Code ENE BMAS02	Company Profile	The company belongs to a group worth € 787 million and is providing a range of engineering solutions to the energy and environment sectors headquartered in Pune, India and operate globally through 19 International offices, 12 Sales & Service offices and 12 manufacturing facilities - 7 of which are in India and 5 overseas. The group consists of 5 domestic wholly owned subsidiaries, 16 overseas wholly owned subsidiaries and 2 joint ventures.
	Needs Assessment	The company is looking for effective separation technology of particular matters from Biomass combustion. Since the density of Ash from biomass combustion is very low compared to other fuels like rice husk and coal and this clogs the bag filters within a short period of time and hence increases the cost of replacement. Therefore the company is looking for alternate technology to effectively remove low density ash which is in the range of 150 - 250 kg/NM <sup>3</sup>





## RENEWABLES AND ENERGY EFFICIENCY – Business Opportunities\_3

### COGENERATION

Code ENE- COG-01	Company Profile	The company is engaged in turnkey engineering services and project management from concept to commissioning in New and Renewable Energy sources projects along with fossil fuelled fired Thermal Power plants. Company is affiliated with Ministry of Power of Government of India as one of the leading consultants with more than 50 projects commissioned on a Pan India basis. This company has entered in the solar power business since the last 2 years.
	Needs Assessment	<ol style="list-style-type: none"><li>1. Looking for equipments to balance high Pressure and Temperature of Steam in Boiler and Turbine of Cogeneration equipments</li><li>2. High efficiency and eco friendly multi fuel boiler which may be operated with variable Fuel matrices not proven yet in Industries.</li><li>3. Reduction of Steam Consumption in Sugar Process.</li><li>4. Biomass Fuel Briquetting Technology.</li><li>5. Reduction of Sulphur in Fuels</li></ol>


### ENERGY MANAGEMENT

Code ENE- MGT-01	Company Profile	The company is engaged in turnkey engineering services and project management from concept to commissioning in New and Renewable Energy sources projects along with fossil fuelled fired Thermal Power plants. Company is affiliated with Ministry of Power of Government of India as one of the leading consultants with more than 50 projects commissioned on a Pan India basis. This company has entered in the solar power business since the last 2 years.
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# RENEWABLES AND ENERGY EFFICIENCY – Business Opportunities\_4

## SOLAR

Code ENE- PV01	Company Profile	The company is a leading manufacturer of DG sets and specializes in DG sets powered by both air cooled and liquid cooled engines with power output covering from 5 kVA to 625kVA. The company is now diversifying in the field of Renewable Energy.
	Needs Assessment	<p>The company is looking for electrical distribution panels and PLC for solar parks. In spite of the presence of companies like ABB in the market the Indian companies are looking for better tech in this field. They are also looking for alternative storage units like for e.g. flywheel storage devices if they could be integrated in the solar fields. The other products for which they are looking to expand their vendor base is as follows:</p> <ol style="list-style-type: none"> <li>1. Solar Photovoltaic Systems</li> <li>2. Electrical Transformers</li> <li>3. Switch Gear</li> <li>4. UPS and Inverters.</li> </ol>

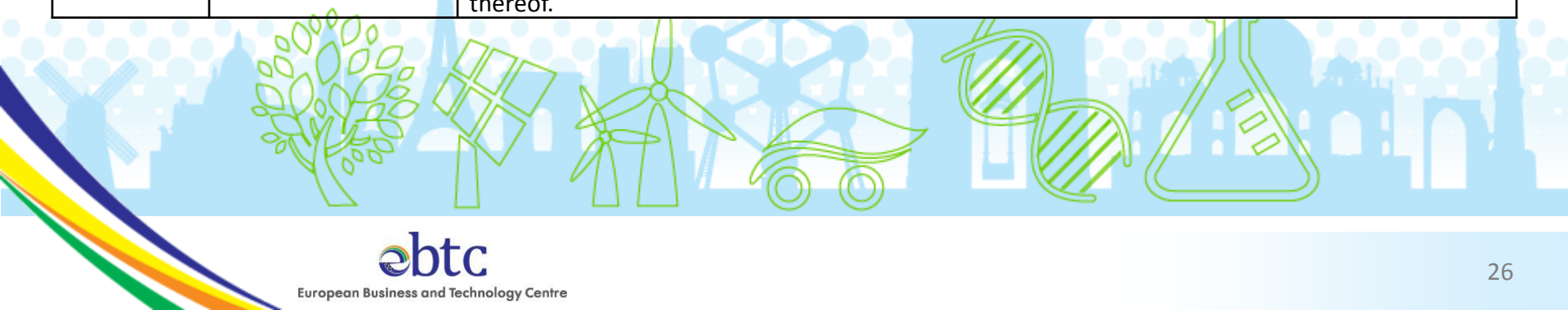
Code ENE- PV02	Company Profile	The company carries out its operations right from the initial stage of assessing the energy requirements of the user. Then it evolves a custom-built system specially suiting the requirements which would be not only efficient but also economical, followed by system integration and commissioning. This carefully built system is also provided with a long term after sales product-support.
	Needs Assessment	 <p>Their main concern at the moment is the invertors. In India ideally the solar or the winds farms are situated in remote areas and generally have an instable connectivity with the grid. Hence the invertors that are used fail when the grid connectivity is lost. In India there are invertors available for off grid purpose as well. However they are looking for an inverter technology that works as a combination of both on-grid and off-grid. They would like to use invertors with the minimum of battery requirements and which could also be used for exporting power to the grid. Basically they would like the invertors to work as both input and output devices in the mode of producing energy.</p>

## RENEWABLES AND ENERGY EFFICIENCY – Business Opportunities\_5

Code ENE-PV03	Company Profile	The company works in the space of System integration and has been a vendor / supplier of services to Regional and Central Government companies with a specialization in Thermal and Photovoltaic systems.
	Needs Assessment	The company is looking to import solar modules, solar charge controllers, solar inverters

Code ENE-PV04	Company Profile	The company is a reputed turnkey Solar / Conventional Energy Project Construction company with an experience of over 20 years providing complete solutions for Installation, Testing, Commissioning and Supply of energy.
	Needs Assessment	They are looking for a partner who can provide them with latest technology in the areas of Net Metering (onsite as well as remote), Smart Building tech, Smart Grid for micro or mini rural electrification

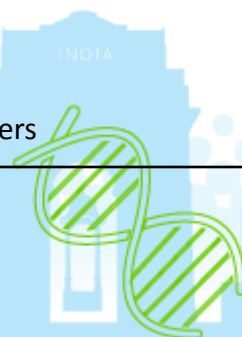
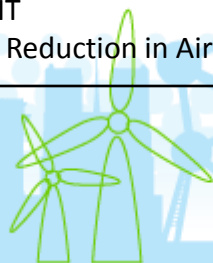
Code ENE-PV05	Company Profile	A diversified Group of companies in Industrial Marketing, Manufacturing and EPC, primarily catering to the entire Mining and Metallurgical Value Chain, as well as diversifying in energy Sector, primarily on Generation side Solar and Wind, Transmission and Distribution
	Needs Assessment	The company is looking for a partner to bid for the Smart Cities tenders in India. They are looking for companies that could provide / partner with them to provide Smart Grids and components thereof.



## RENEWABLES AND ENERGY EFFICIENCY – Business Opportunities\_6

Code ENE-PV06	Company Profile	The company was established in the year 1993 with core competencies in the field of Energy Distribution, Energy Quality and Efficiency and Automation Services. As on date the company has implemented over 30MW capacity ground and roof mounted Solar Projects for both captive and sale of power to utility and also offer Project Consulting and EPC services to our clients in various sectors with 20MW capacity of projects in different stages. They are presently developing 60MW Solar Power Park at Satara, Maharashtra offering turnkey one-stop solutions for Investors and Developers right from Project Consulting, Licensing & Permits, Land Advisory and Arrangement, Power Evacuation, Project Design and EPC services for setting up of Solar power projects
	Needs Assessment	The company is looking for Solar panels cleaning technology, batteries with longer life or any other alternative mode of energy storage.

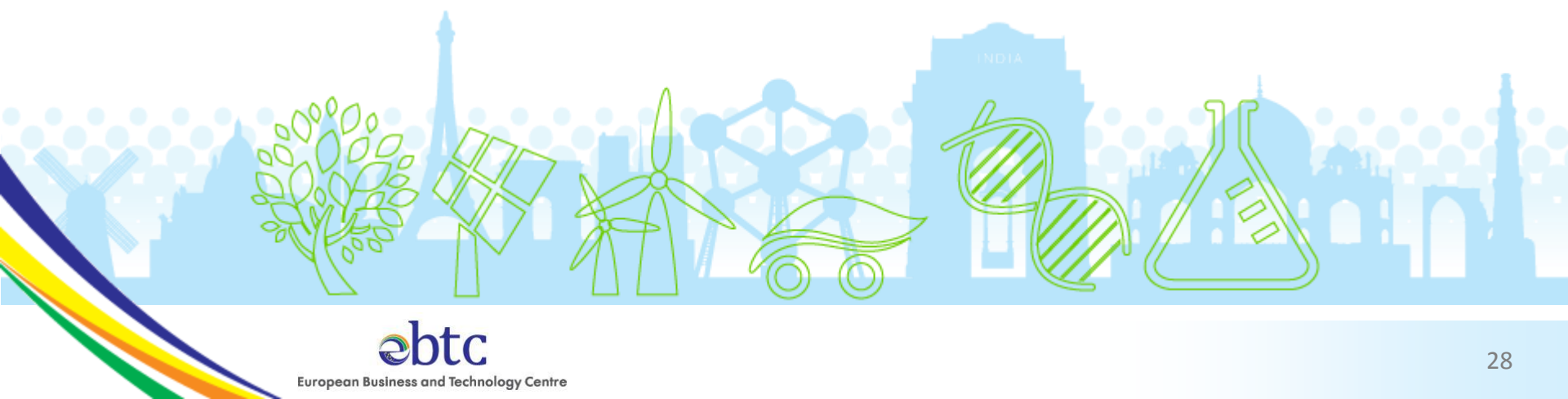
Code ENE-PV07	Company Profile	The company operates in the automotive sector as manufacturer, agent, distributor and service provider. It has 38,000 employees and a turnover of 23 billion euro in 2013. The company includes 85 manufacturing plants, 12 R&D centres and 26 application centers in 19 countries. As of now the company is using conventional technology and needs support for the up gradation of the same.
	Needs Assessment	<p>The company is looking for the following:</p> <ol style="list-style-type: none"> <li>1. Use of Solar energy</li> <li>2. Green SCM</li> <li>3. Green IT</li> <li>4. Energy Reduction in Air Conditioning Chillers</li> </ol>



# RENEWABLES AND ENERGY EFFICIENCY – Business Opportunities\_7

## WIND

Code ENE- EOL01	Company Profile	<p>The company is primarily engaged in the design of energy efficient and cost effective wind turbines:</p> <p>a) Contra Rotor Wind Turbines, b) Axial Flow Helical Bladed Rotors - meant for offshore installation at minimal cost and high efficiency.</p> <p>This design integrates the hydraulic power transmission device for high efficiency and light weight. The company has already filed two USPTO applications on this topic.</p>
	Needs Assessment	<p>They are looking for a technology of Axial Flow blades to be incorporated in the wind turbines there by increasing the efficiency of the turbines and also reduce the weight of the entire unit. They are also looking for better technology for the Contra Rotor Wind Turbine (CRWT) to improve over the drawbacks (weight, size, installation and maintenance in offshore environment) of the current radial bladed rotor.</p>

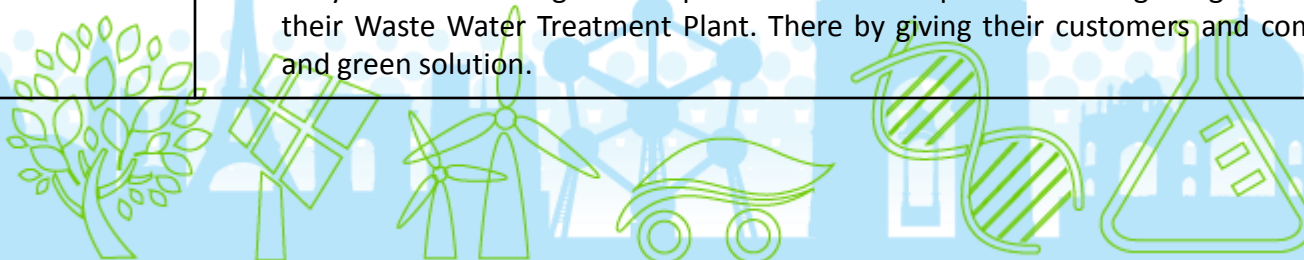




# RENEWABLES AND ENERGY EFFICIENCY – Business Opportunities\_7

Code ENE- EOL03	Company Profile	The company is a leading ISO 9001:2008 certified Environmental firm over 20 years in the field of water and waste water treatment plants. They are involved in the business of Design and Manufacturing of advanced Water and Waste Water Treatment technologies, Solid waste management, Rainwater Harvesting and Environmental Consultancy and are well known for providing best and economically feasible solutions.
	Needs Assessment	The company is looking for : <ol style="list-style-type: none"> <li>1. Membrane Bio-Technology</li> <li>2. Bio Gas - Waste to Energy</li> <li>3. New improved component which can help improve efficiency and cost of existing sewage treatment plants.</li> </ol>

Code ENE- EOL04	Company Profile	The company has an excellent reputation worldwide for providing industrial water treatment systems and waste water treatment systems installation and specializes in manufacturing water treatment plants and equipment designed to meet performance requirement consistently and cost-effectively. Through an advanced in-house design and engineering capabilities, the company has evolved as a market leader, providing end to end solutions for water treatment.
	Needs Assessment	The company is now looking for the following solutions: <ol style="list-style-type: none"> <li>1. Latest technology for Moving Bed Biofilm Reactor (MBBR)</li> <li>2. They are also looking for companies that can help them in integrating Solar energy for use in their Waste Water Treatment Plant. There by giving their customers and complete sustainable and green solution.</li> </ol>



# ENVIRONMENT PROTECTION – Business Opportunities\_1

## WATER MANAGEMENT

Code ENV- WAT01	Company Profile	The company specializes in industrial wastewater treatment and fiber recovery in paper mills using the technology of Dissolved Air Flotation. Set up in 2001 the company has over 100 installations to their credit both in India and abroad in a variety of industries: pulp and paper, textile, milk processing, meat processing, slaughter houses, petroleum refining etc.
	Needs Assessment	The company is looking for filtration technology from Europe which can reduce the TSS level from about 100 to 0 - 10 ppm

Code ENV- WAT02	Company Profile	This company is one of the few in the world which provides fully integrated liquid engineering and committed to provide the customers with innovative water and wastewater treatment technologies. From raw water clarification to wastewater reuse and disposal, they have all the expertise to help their customers reduce operating costs, increase efficiency and protect their valuable equipment.
	Needs Assessment	<p>The company is looking for the following technologies and equipments from Europe:</p> <ol style="list-style-type: none"><li>1. Dissolved Air Flotation (DAF) clarifiers</li><li>2. Belt Filter Press</li><li>3. Centrifuges</li><li>4. Lamella Clarifier</li><li>5. Oil-Water Separator</li><li>6. Advanced disinfection system</li></ol>

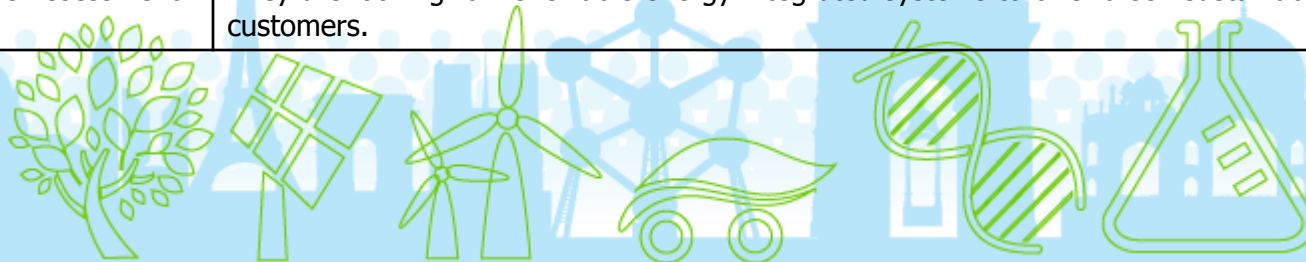
## ENVIRONMENT PROTECTION – Business Opportunities\_2

Code ENV- WAT03	Company Profile	This company was started in 1983 with technical collaboration from USA. The company is the world leader in Dissolved Air Floatation clarifiers (DAF) and the technology was developed and patented worldwide by its founder. Today the company supplies complete solutions for air\water and waste water\sewage system.
	Needs Assessment	The company is looking for the following technologies from Europe: 1. SBR technology, 2. Decanter Centrifuges

Code ENV- WAT04	Company Profile	The company provides bio-catalytic products and innovative systems in the fields of water treatment, Soil, hydrocarbon & waste remediation along with cleaning line of cutting edge technology products. Products are used for Water treatment for STP, ETP, chemicals for Cooling towers, Boilers, Chillers, Close loop systems, High purity water generation systems, water treatment plants, Ion exchange resins, pharma resins, adsorbants etc
	Needs Assessment	The company is looking for the following technologies from Europe: 1. Sewage Treatment Plants 2. Etp Effluent Treatment Plants 3. Chemicals For Cooling Towers 4. Close Loop Systems 5. High Purity Water Generation Systems, 6. Ion Exchange Resins 7. Pharma Resins 8. Adsorbants Seeds

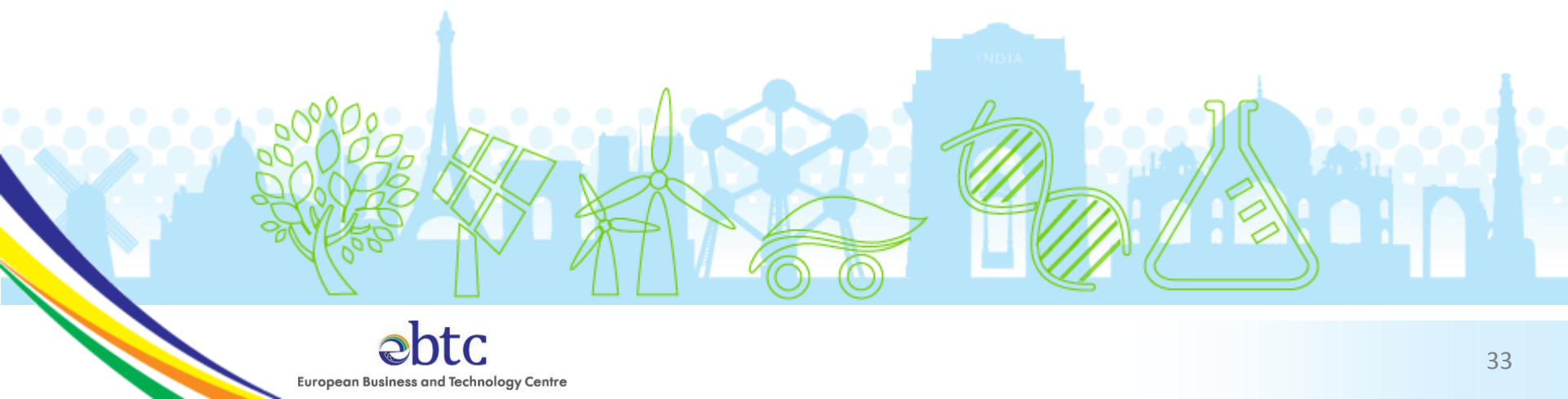
## ENVIRONMENT PROTECTION – Business Opportunities\_3

Code ENV- WAT05	Company Profile	This group ranks among the top water management solution companies of its kind in the world and specializes in multidisciplinary fields such as water and wastewater treatment systems, waste to energy, desalination, solid waste management, bio remediation & zero liquid discharge system and operates through subsidiaries and branches spread globally. The group undertakes turnkey contracts which comprises of engineering, procurement, construction.
	Needs Assessment	The company is looking for the following technologies from Europe: <ol style="list-style-type: none"> <li>1. Multi Effect Evaporator</li> <li>2. Bio-Gas</li> <li>3. Mixers</li> <li>4. Aeration</li> <li>5. Smart &amp; Remote Monitoring</li> </ol>
Code ENV- WAT06	Company Profile	The company was established in the year 2006, an ISO 9001:2008 certified organization is engaged in manufacturing and supplying a wide range of Water, Bio Gas and Sewage Treatment Plants. The offered plants are known for their optimum performance, longer working life and low power consumption. The company has achieved more than 300 project installations. Some of their customers are L & T Ltd., Tata Yazaki, HSBC, SKF Ltd., SKS Fasteners, Hindustan Lever, Cummins India, Minda- Sai and Valio Minda, Mahindra Realities, Kalpataru, Suyog developers to name a few.
	Needs Assessment	They are looking for MBBR system which are Less Energy intensive systems, low operational cost. They are looking for renewable energy integrated systems to offer a self sustainable solution to their customers.



## ENVIRONMENT PROTECTION – Business Opportunities\_4

Code ENV- WAT07	Company Profile	The company belongs to a group worth € 787 million and is providing a range of engineering solutions to the energy and environment sectors headquartered in Pune, India and operate globally through 19 International offices, 12 Sales & Service offices and 12 manufacturing facilities - 7 of which are in India and 5 overseas. The group consists of 5 domestic wholly owned subsidiaries, 16 overseas wholly owned subsidiaries and 2 joint ventures.
	Needs Assessment	<p>The company is looking for the following:</p> <ol style="list-style-type: none"><li>1. Effluent Treatment Plants for distillery, pharma and sugar sector</li><li>2. Ceramic membrane technology for colour removal especially for effluent coming out of dyeing houses.</li><li>3. Evaporated technology for RO reject / water removed from sludge</li><li>4. SO<sub>2</sub> removal from flue gases other than current technologies which converts air pollution to water pollution by using wet scrubber.</li></ol>



## ENVIRONMENT PROTECTION – Business Opportunities\_4

### WASTE MANAGEMENT

Code ENV- WM01	Company Profile	The company excels in the field of manufacturing engineering equipments. This wide range constitutes of pollution control equipments, management and handling of municipal solid waste, housekeeping in infrastructure industries, special purpose mobile equipments, bulk transportation equipments, etc. The company has established a reputed name all over India and worldwide with a market experience of 26 years in manufacturing, research and development.
	Needs Assessment	The company is looking for Manufacturing Collaboration in India for Implementation of Automated Vacuum Refuse Collection System on Turn-key Basis for Multi-Storied Buildings in India – SMART CITIES.

Code ENV- WM01	Company Profile	The company is engaged in executing Waste Management projects. The company primarily focuses on the getting the most advanced technologies from the world over to address the waste management issues. This company started its operations with a vision to provide professional, state-of-the art solutions for solid waste management with a commitment towards excellence
	Needs Assessment	They are looking for technology or equipments to segregate the mixed waste in large volumes considering that the waste also has 50 - 60% moisture.





## ENVIRONMENT PROTECTION – Business Opportunities\_4

Code ENV- WM03	Company Profile	The company is a leading ISO 9001:2008 certified Environmental firm over 20 years in the field of water and waste water treatment plants. They are involved in the business of Design and Manufacturing of advanced Water and Waste Water Treatment technologies, Solid waste management, Rainwater Harvesting and Environmental Consultancy and are well known for providing best and economically feasible solutions.
	Needs Assessment	The company is looking for : <ol style="list-style-type: none"> <li>1. Membrane Bio-Technology</li> <li>2. Bio Gas - Waste to Energy</li> <li>3. New improved component which can help improve efficiency and cost of existing sewage treatment plants.</li> </ol>

Code ENV- WM04	Company Profile	The company has an excellent reputation worldwide for providing industrial water treatment systems and waste water treatment systems installation and specializes in manufacturing water treatment plants and equipment designed to meet performance requirement consistently and cost-effectively. Through an advanced in-house design and engineering capabilities, the company has evolved as a market leader, providing end to end solutions for water treatment.
	Needs Assessment	The company is now looking for the following solutions: <ol style="list-style-type: none"> <li>1. Latest technology for Moving Bed Biofilm Reactor (MBBR)</li> <li>2. They are also looking for companies that can help them in integrating Solar energy for use in their Waste Water Treatment Plant. There by giving their customers and complete sustainable and green solution.</li> </ol>

## ENVIRONMENT PROTECTION – Business Opportunities\_5

### MISCELLANEOUS

Code ENV- MIS01	Company Profile	The company has so far completed more than 400 projects all over India and neighboring countries like Sri Lanka, Indonesia, Thailand, Dubai as well as East Africa etc. The company is privileged to be retained as a “Consultant” by various State Pollution control Boards and Public Sector Undertakings. The company exclusively works in the analytical field and provides support service in Effluent Treatment plant feasibility projects
	Needs Assessment	<p>The technologies that the company is looking for are as follows:</p> <ol style="list-style-type: none"> <li>1. Belt press filters of all sizes.</li> <li>2. Multi effect evaporation with economical system</li> <li>3. Package MBR plants</li> <li>4. Disinfection Technology</li> <li>5. Reverse osmosis membrane.</li> <li>6. PLC &amp; automation of equipment</li> <li>7. On line monitoring of environmental parameters</li> </ol>

Code ENV- MIS02	Company Profile	The company is a premier institute for research, capacity building and dissemination of knowledge for the urban sector in India. It conducts research on urbanization, urban policy and planning, municipal finance and governance, land economics, transit oriented development, urban livelihoods, environment & climate change and smart cities.
	Needs Assessment	<p>The company is looking for the following:</p> <ol style="list-style-type: none"> <li>1. Water Technology and Waste Water Re-cycling</li> <li>2. Air Quality with Clean Technology for generating less black carbon.</li> <li>3. Biomass, to find technology for immediate and fast quenching in incinerators</li> <li>4. Solar harvesting with structural integration of the buildings i.e maximum utilization of the space.</li> </ol>

# Thank You

For more information on the project and business opportunities, please contact  
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EBTC is a programme co-funded by the European Union  and coordinated by  EUROCHAMBRES