

# MARKET ACCESS INTELLIGENCE FOR DOING BUSINESS IN INDIA IN CLEANTECH SECTORS



European Business and Technology Centre

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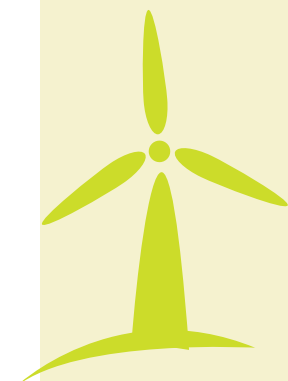


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# MARKET ACCESS INTELLIGENCE FOR DOING BUSINESS IN INDIA IN CLEANTECH SECTORS

## INTRODUCTION

The European Business and Technology Centre (EBTC) supports European companies and researchers in entering the Indian market. Bearing in mind the overall objective of EBTC is to become a reference point for promoting European clean technologies in India, this report is focussed on the specific sectors that EBTC is mandated for: Biotechnology, Energy, Environment and Transport, as well as IPR which cuts across these sectors. The cleantech sector in India has immense potential but still presents several challenges for foreign companies aspiring to do business in India. This report therefore provides a summary of market access intelligence gathered by EBTC, including the policy barriers and market obstacles that limit the commercial development of the clean technology sectors, with a view to overcoming these.

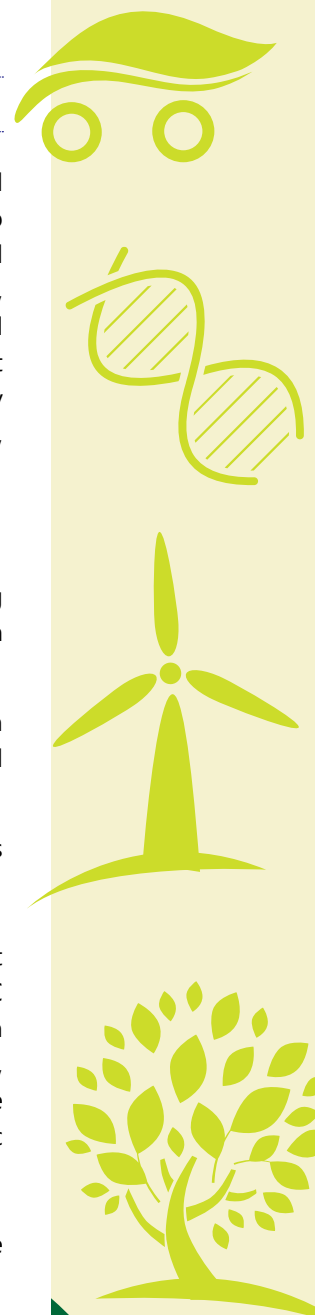
In its five years of existence, EBTC has developed a unique set of expertise thanks to:

- Several studies and reports produced in collaboration with the consortium partners tackling specific issues related to the EBTC sectors. These studies are available on the 'Intelligence Hub' on the EBTC website and they can be freely consulted and disseminated.
- The experience gained while organising several activities, which allowed EBTC to be directly in touch with companies, researchers and governmental institutions, both from the European and the Indian side.
- Direct knowledge from sector specialists in biotechnology, energy, environment and transport, as well as a specialist in Intellectual Property Rights (IPR).

The report does not aim at presenting a comprehensive list of every single challenge per sector but it is offering key insights with several references to studies and reports that were produced by EBTC to allow readers to delve deeper. Whereas the main target audience are policymakers from European and Indian administrations who are encouraged to bring down policy barriers and market obstacles, representatives of the business community and companies are also warmly invited to further elaborate upon the analyses and interact with EBTC should they require more information or need specific follow-up.

The report is organised as per EBTC's sector focus and within each sector, the following elements are analysed:

- **Institutional, legal and regulatory framework.** This section summarises the wider institutional environment and legal setting of each sector.
- **Policy level barriers and market obstacles.** This section gives an overview of the different obstacles present in India.
- **Positive evolutions and market opportunities.** This section highlights enabling policy initiatives and support measures in place.
- **Recommendations to policy makers.** This section elaborates on recommendations for policymakers to deal with the major obstacles that need to be addressed.



A separate section has been dedicated to IPR, since one of the foremost barriers for Small and Medium Enterprises (SMEs) is the protection of their IPRs. In light of the EU's Annual Report on Trade and Investment Barriers in 2013<sup>1</sup>, the issues that are highlighted include policy barriers and market obstacles to companies striving to prosper in the Indian market. The report concludes by drawing the attention to the common market access obstacles within the different cleantech sectors and offers general recommendations to policy makers as well as European SMEs entering the Indian market.

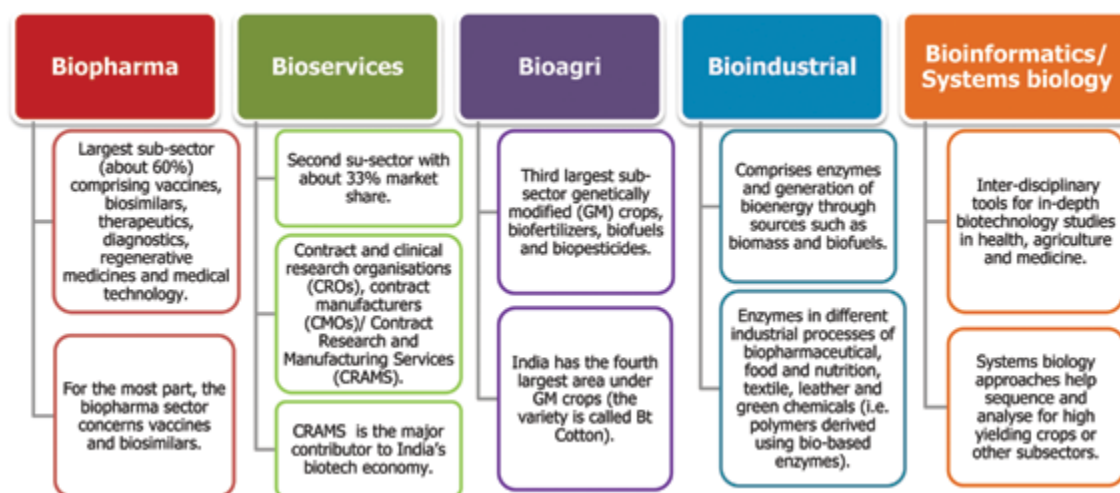
Considering the challenges, EBTC will continue to support the expansion of the European presence in the cleantech sector in India by giving advice on how to overcome the obstacles and by continuing to monitor the evolving policy landscape. In doing so, EBTC is feeding policymakers with key insights for any bilateral trade meetings as well as discussions on the Free Trade Agreement (FTA), which have entered into a critical phase.



## BIOTECHNOLOGY SECTOR

The Indian biotechnology sector is the fastest growing knowledge-based sector, and set to play a key role in shaping India's economy. With numerous advantages in terms of research and development (R&D) facilities, knowledge, skills, cost effectiveness and government support, the biotechnology industry in India is considered to be one of the top 12 biotech destinations worldwide and the second largest market in Asia after China<sup>2,3</sup>. The biotechnology sector in India is expected to achieve revenues of over €8 billion by 2017, growing at a compound annual growth rate (CAGR) of 22%.<sup>2,4</sup> Revenue from biotech exports reached €1.6 billion in 2013, accounting for more than half (51%) of total industry revenues<sup>7</sup>.

**Figure 1: Five elements of EBTC's Biotechnology Sector**



## Institutional, legal and regulatory framework

India is one of the first few countries to have recognised the potential of biotechnology in the agricultural and health sectors during the early 1980s and at present there are six major entities responsible for financing, policy making, framing regulatory systems and supporting research in the realm of biotechnology. These are the Department of Science and Technology (DST), the Department of Biotechnology (DBT), the Council of Scientific and Industrial Research (CSIR), the Indian Council of

Medical Research (ICMR), the Indian Council of Agriculture Research (ICAR) and the University Grants Commission (UGC), Department of Scientific and Industrial Research (DSIR). DST, DBT and DSIR are part of the Ministry of Science and Technology, ICMR is with the Ministry of Health, ICAR is with the Ministry of Agriculture and UGC is with the Ministry of Human Resource and Development.

India amended its Patent Act in 2005 for the third time, to usher in a new product patent regime. Provisions in the amended Act which relate specifically to biotechnology include the following:

- Plants, animals and seeds, including essentially biological processes used for propagating plants and animals, are not patentable. The area of patentability in relation to micro-organisms is not clear. Going by European and US precedents, it would appear that only such microorganisms that are the result of human intervention would be patentable.
- Synthetic genes too (as distinct from naturally occurring gene segments) are now the subject matter of patentability.
- Genetic inventions include single nucleotide polymorphism (SNP), vectors, recombinant products such as vaccines, enzymes, hormones, and so on.
- In order to obtain a patent, the Act requires the deposit of biological material with the International Depository Authority (IDA). IMT (Chandigarh) is the IDA in India for some biological materials such as bacteria and plasmids.

## Policy level barriers and market obstacles

Although India has been flourishing in the biotech businesses, bio-services and exports, there are several hurdles faced at the market and policy level. Some of these are listed below.

- The investment restrictions and entry route barriers are related to:
  - The requirement of significant amounts of **funding for setting up R&D infrastructure**.
  - **Bureaucratic delays and ineffective dispute resolutions**. Firstly, delays in the issuance of clearances and no objection certificates for the new entries or even for establishing manufacturing sites. Secondly, delays in procurement processes due to lack of information related to policies at different levels (Centre, State and customs) on import and export of biological materials for research work which can have adverse effect on international collaborations.
  - Lack of definitive policies<sup>5</sup>: for example the **Biotechnology Regulatory Authority of India (BRAI)** which will be an independent, autonomous, statutory agency responsible for regulating the research, transport, import, manufacture and use of organisms and products in health care, agriculture, veterinary and environment. The BRAI has been pending for approval before parliament for years. In this knowledge based sector, regulatory clarity is the need of the hour, which is another deterrent and reason for the investor perception of uncertainty and risk to enter the Indian market.
- The **problems associated with importing** comparator drugs, test materials, Genetically Modified Organisms (GMOs), and Living Modified Organisms (LMOs) into India for R&D purposes and for exporting finished products or biologics out of India (for instance to perform clinical studies), is currently an extremely cumbersome process.



- In the bio-agri sector, the **lack of a definitive regulatory system for Genetically Modified (GM) crops** to address food safety problems has affected several field trials. Furthermore, the **lack of harmonisation** on policies between the Central government and the different States adds to the problem of uncertainties associated with the issue of no objection certificates by State governments for carrying out field trials of GM crops.
- In the bioinformatic sector, there is a need to look into Bio-IT infrastructure and a standardised data integration platform<sup>5</sup>, as there is **redundancy of biological information stored at different virtual repositories**. There is a deficiency of Bio-IT centres to promote sequencing and multi-disciplinary clinical studies where **data security challenges and the lack of regulatory paradigms also raise concerns regarding the safe and ethical use of personalised data** on a public platform. Access to Bio-IT benefits is extremely limited or mostly absent in non-urban areas which is a hurdle for the development of tools related to remote health monitoring systems.

## Positive evolutions and market opportunities

The Indian government has framed a favourable policy to boost foreign investment in biotechnology, by taking the following measures:

- Allowing 100% Foreign Direct Investment (FDI).
- Tax exemption benefits for the biotech sector are matched with those of the Information Technology (IT) sector. For example, the entry tax exemption up to 100% for 3 years is applicable to biotech companies, similar to the IT sector.
- A reduction in peak custom duties from 30% to 25%.
- An increase on the rate of depreciation on life-saving equipment from 25% to 40%.
- Excise duties on all goods produced in the pharmaceutical sector are reduced from 16% to 8%.
- Tax holiday for R&D companies.

The Central and the State governments have taken steps towards framing a biotechnology development strategy<sup>9</sup>. The key elements of the strategy are:

- **Public Private Partnership (PPP):** About 30% of the Government's DBT budget is to be invested in PPP schemes. The aim is to promote innovation, pre-proof-of-concept research, and accelerated technology and product development in biotechnologies related to agriculture, human health, animal productivity, manufacturing and environment.
- **Biotechnology Industry Partnership Programme for Advanced Technologies:** This Programme has been launched in order to achieve global competitiveness and generate intellectual property in frontier biotechnologies related to agriculture, health, environment, bio-energy and bio-manufacturing, with a focus on contributing to a long-term and sustainable bio economy.
- **Centres of Excellence in Biotechnology:** In order to create and strengthen world-class institutional research capacity in biotechnology, a few Centres of Excellence (COEs) have been established and are engaged in multi-disciplinary thematic research.
- **National Policy on Biofuels:** The Government has set up a National Biofuel Coordination Committee and a Biofuel Steering Committee, and it has also initiated a project to conduct genome-wide research on a range of important agricultural crops.

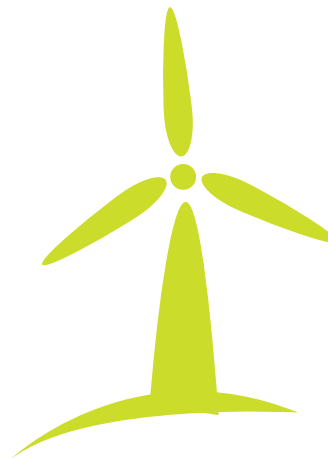
## Recommendations to policymakers

- With the current cumbersome regulatory process, there is an urgent need to streamline regulatory frameworks with a complete review from experts across industries and academia. It is imperative that regulatory policies between the Central and State government agencies are harmonised. This is an essential task especially taking into account GM organisms.
- Streamline policy for import and export of biological materials including human samples. The present policy for import and export of biological materials is rather unclear, open to individual interpretation, time consuming and often facing delayed approvals. Therefore, it is suggested that these policies are reviewed and it is considered to adopt policies which are generally followed by international organisations.
- Establish a single window for securing clearances and no objection approvals from both the Central as well as the State agencies which could prove beneficial for both Indian and international companies and organisations.

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## ENERGY SECTOR

### Introduction

India is the world's fifth largest electricity market and is expected to become the third largest consumer in the world by 2030 (IEA 2011). However, in this emerging economy, around 404 million Indians (28% of the population)<sup>10</sup> still lack access to modern electricity. To meet this increasing national electricity demand with an abundant and sustainable supply, India enforced the Electricity Act 2003, aiming to increase industry investments in renewable energy supply technology and to nurture the national manufacturing sector. In addition, the Central Electricity Regulatory Commission (CERC) has established tariff orders designed to support renewable energy development while balancing investment interests, electricity needs and climate change issues.<sup>11</sup>

Under the enabling generation based incentive (GBI) and accelerated depreciation (AD) regime with an installed capacity of 19 Giga Watt (GW), wind energy has been a serious contributor so far, closely followed by over 7 GW of small hydro and biomass together. Furthermore, India is augmenting solar energy rapidly with almost 300 sunny days of resource availability and an enabling solar policy. Launched in 2010, the Jawaharlal Nehru National Solar Mission (JNNSM) has set the ambitious target of deploying 20 GW of grid-connected solar power systems by 2022. The target, if achieved, could lead to grid parity of solar power. JNNSM Phase I results achieved in 2010-13 have been very encouraging, wherein 1.8 GW of grid interactive solar power plants were installed as against the target of 1 GW.

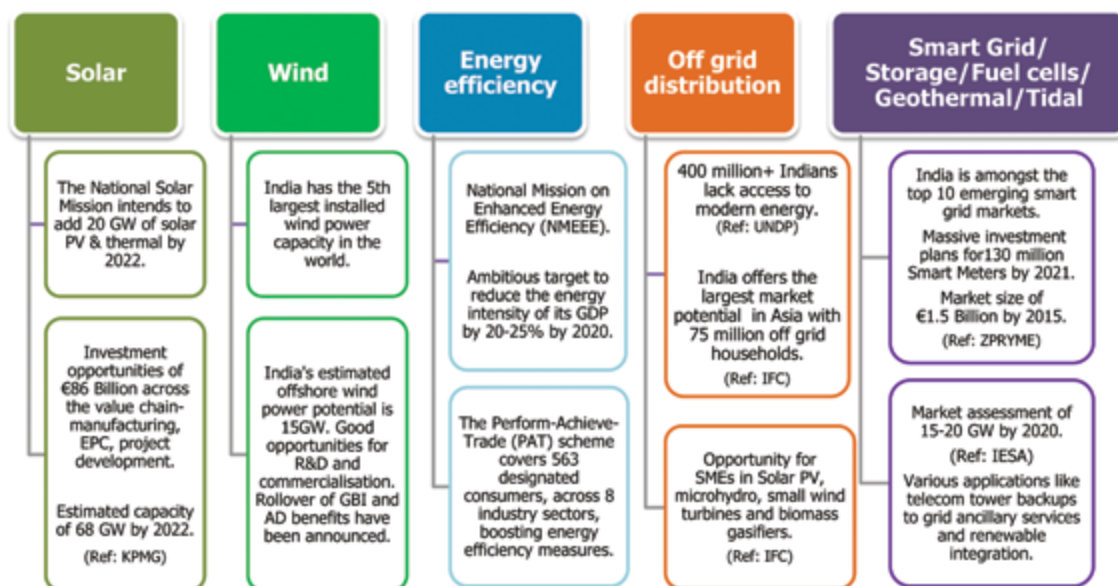
### Institutional, legal and regulatory framework<sup>14</sup>

The Electricity Act 2003 and the National Tariff Policy set the basis for the sector. The Ministry of Power (MoP), the Ministry of New and Renewable Energy (MNRE), with CERC and State regulatory bodies (State Electricity Regulatory Commissions – SERCs), form the governance structure of the electricity sector.

To enlarge the scope of renewable energy uptake, the Renewable Purchase Obligations (RPO) policy, devised under the National Action Plan on Climate Change (NAPCC), targeted to produce 5% renewable electricity in 2009, 7% in 2012 and 15% by 2020. The NAPCC identifies eight core 'national missions', which provide a multi-pronged, long-term and integrated strategy for achieving key goals in the context of climate change.<sup>14</sup>

The Central Regulator (CERC) notified the RPOs for individual States to comply with. Further, a market mechanism of Renewable Energy Certificates (RECs) is mandated to those electric utility companies,

**Figure 2: Five Elements of EBTC's Energy Sector**



which cannot purchase obligated renewable energy directly. At the time of writing, about 25 States have specified their RPO targets including a separate obligation to purchase solar power and an equal number of States have issued REC regulations.

## Policy level barriers and market obstacles

The Indian electricity sector faces many systemic issues in the process of translating policy into action. The distribution sector witnesses daunting aggregated technical and commercial (AT&C) losses that are unnaturally large, to the extent of 50% in some States. These aggregated losses are hampering the growth of the sector. There are repeated instances of the State utilities not honouring Power Purchase Agreements (PPAs) owing to their poor balance sheet, resulting in a perennial delay of payments to Independent Power Producers (IPPs). The investor risk is at its peak given the declining financial health of State utilities/distribution companies.

The electricity transmission and evacuation systems are also facing major issues. The same can be said with regards to challenges in preferential grid access to renewable energy sources like solar and wind. Inadequate transmission capacity results in frequent network downtimes. Due to grid bottlenecks, in States such as Tamil Nadu, more than 50% of wind electricity is wasted without being evacuated to the grid, even though the State suffers from electricity deficit. The transmission planning process ignores supplies from renewable sources.

Some of the concerns that restrain the growth of this sector include:

- **The non-removal of fossil fuel subsidies**, which artificially lowers fossil fuel based energy prices, is encouraging wasteful energy consumption and making renewable and more efficient technologies less competitive.
- There is **a lack of institutional coordination** between MNRE and State bodies while rolling out regulatory framework and promotional schemes. For instance, there is a clear **lack of uniform and**

**stringent implementation of RPOs**, despite mandated regulation. While some States like Tamil Nadu and Karnataka have surpassed their RPO targets, others like Delhi, Jammu and Kashmir, Jharkhand, Manipur and Tripura achieved nil.<sup>12</sup> The lack of RPO enforcement and inefficient monitoring by the SERCs impacts the upcoming REC market.

- There are **no policies or specific regulatory frameworks** to stimulate and strengthen the sub-sectors such as biomass and smart grids. The roll out of the Biomass Mission and the Smart Grid Mission by the MNRE has been pending for long.
- There is an **absence of a credible resource assessment database** for all renewable energy resources<sup>15</sup>. The availability of resources in a particular region and its seasonal variations impact levelised cost of electricity (LCOE) and the project viability. Although onshore wind resources have been mapped at 50 metre hub height, mapping wind resources at higher hub heights can enhance the onshore wind resource potential. Similarly, off-shore wind, tidal, geothermal and wave energy are some areas that need actions for a comprehensive resource mapping exercise and updating the existing resource maps.
- **The unavailability of land** is a concern, as land requirements for renewable energy projects can range from 5 to 22 times the land required for conventional energy projects. Hence, land acquisition becomes a significant factor while estimating the viability of renewable energy power projects at current electricity prices.<sup>13</sup> For example, a European solar company intended to set up a 100 MW solar capacity in a single location. So far, no Indian developer has shown interest in such a size, since they are constrained primarily by land acquisition and power evacuation issues.<sup>14</sup>
- The **regulatory framework does not take into consideration social, economic and environmental costs and benefits** of renewable energy generation. Ill-informed local communities are at loggerheads with project developers, thus significantly delaying the project execution.
- 30% of capital subsidy often encourages **false pricing of renewable products**, especially government sponsored village electrification projects.
- The administrative process to **apply for subsidies is tedious**.
- There are **high transaction costs**, involved in projects, from legal, technical, and transactional complexities, including non-standardised deal structures and substantial technical content of project appraisal, development, and monitoring.<sup>16</sup>
- It is still **expensive to get a product tested and certified** in India. Hence, many off-the shelf solar photovoltaic products available in the open market are substandard and unreliable, thus impacting the trustworthiness of renewable energy products and solutions.
- The **delay in project implementation timelines and the lack of availability of adequately skilled manpower** are hampering project delivery deadlines, inviting penalties and impacting investor confidence.
- Wind energy projects account for nearly 70% of the total installed capacity of renewables. However, due to the **withdrawal of generation based incentives (GBI) and accelerated depreciation (AD)** benefits, the last financial year (2012-13) showed a record slump in wind capacity addition. There is no Feed-in-Tariff (FiT) announced for the solar rooftop and distributed generation projects, which would contribute towards addressing remote village electrification successfully.
- **The value added tax (VAT) on renewable energy products differs widely across States** and is therefore hampering the economies of scale that European companies could benefit from Indian



market. States like Andhra Pradesh, Maharashtra and Punjab have exempted renewable energy products such as solar photovoltaic home lighting systems from VAT. In contrast, VAT is still imposed at the rate of 5% in States like Odisha which has 57% of households without electricity, according to the 2011 Census.

- There are **concerns regarding Domestic Content Requirement (DCR)** in the solar sector:
  - Phase I of JNNSM mandated a 30% DCR in crystalline silicon modules to support local manufacturers. However, there was strong discontent amongst Indian developers to source modules locally. Being sceptical of the capability of Indian manufactures to supply the bulk quantity, on time, with high quality and competitive pricing, Indian developers feel that DCR restrictions placed on them to use domestic solar technology could harm the industry by locking out other commercially proven technologies, since the current market conditions are very different now than in the immediate past in this very dynamic sector. Despite DCR, domestic manufacturing did not take off and equipment import is still very high in order to meet the demand.
  - The draft guidelines of Phase II JNNSM mandate a domestic content requirement despite the on-going trade complaint with WTO by the USA, Australia and Japan. In Phase II, 375 MW, a 50% out of the total capacity of 750 MW, will have a DCR. At the time of bidding, the developers can either opt for 'DCR' or 'Open', or both categories. However, separate bids have to be made for DCR and non-DCR projects. It is expected that the tariffs for projects with DCR will be slightly higher, that could impact the viability and assortment of the project.
- Recent developments concerning **anti-dumping and countervailing measures could impact European companies with higher duties.**
  - In November 2012, the Solar Manufacturers Association (SMA), representing domestic solar manufactures, submitted a petition to the Ministry of Commerce to investigate the dumping of PV products from China, Taiwan, Malaysia and the US.<sup>17</sup> The petition was further expanded to include the EU and Japan. Indian manufacturers petitioned to levy duties of at least 47%, and up to 200% in some cases. The petition is under investigation with the Ministry.

## Positive evolutions and market opportunities

An Ernst & Young (2011) report states that the recent growth in India's renewable energy sector, the enacted policy support schemes and tariff orders for renewables, have placed India among the best investment destinations for renewable energy equipment manufacturers and service providers (third only to China and the United States). The Government of India has not only allowed 100% FDI in the energy sector but also amended previous norms and practices to provide a climate conducive to investment. An 'Ernst & Young 2012 India attractiveness survey' reveals that in 2011 India was the 3<sup>rd</sup> global destination in terms of FDI value and 4<sup>th</sup> in terms of number of overall projects.

Global new investment in the renewable energy sector rose 17% to a record €203 billion in 2011, as per the 2012 REN21 global status report on renewable energy. With 62% growth, India displayed the fastest expansion in investment of any large renewable energy market in the world. In 2011, India attracted €9.5 billion investment, one of the top 5 new capacity investments in the world. In the wind sector, India was the third largest market in 2011 for the second year running, adding about 3 GW. With the National Solar Mission policy boost of achieving 20 GW by 2022, solar investments in India are on the rise, from a mere 10 MW in 2010 to the current installed capacity crosses just above 1.8 GW.

As per the Bloomberg New Energy Finance (2013) report, new capacity investments in renewable energy witnessed a 45% slump in India during 2012, mirroring global investment trends in this sector. However, the MNRE as a nodal ministry intends to advance the proliferation of renewable energy, and has rolled out plans for 10 GW solar investments by 2017. Recently, MNRE invited bids to procure 750 MW of solar energy investments under JNNSM Phase II.

## Recommendations to policymakers

- The financial health of State utilities and distribution companies needs to be improved so they can honour their Power Purchase Agreements (PPAs) and ensure timely payment to Independent Power Producers (IPPs). As IPPs are major investors in renewable capacities in India, the assurance of continuous and timely payment is very critical to their strategic sustainability.
- Review and deliberate the Domestic Content Requirement (DCR) under existing free/fair trade regimes because DCR in renewable energy is likely to continue to be protected in one form or another – whether through tariffs, subsidies, development grants, favourable loans or export credits.
- Facilitate a comprehensive resource mapping exercise as there is a need to create, update and validate a database of renewable energy resources, through a systematic approach, in association with specialised institutions and experts.
- The product testing and certification process needs streamlining. There is no real quality standardisation of for instance, Solar PV product manufacturers for distributed generation. Design and application are not a part of standardisation. The promotion of vendors connected to the Government skew the quality resulting in sub-standard product dissemination.
- Immediate roll-over of GBI and AD for the wind sector and a uniform waiver of VAT on renewable energy products will be a game-changer in the promotion and acceptance of solar photovoltaic systems, small hydro and biogas equipment.
- A policy push is required in the sub-sectors of biomass and smart grids through rolling out 'The Smart Grid Mission' by the MoP and 'The Biomass Mission' by the MNRE. The Smart Grid Mission should enable and create opportunities to upgrade the electricity distribution systems and smart integration of the renewables ensuring quality power. The Biomass Mission should delineate supply chain issues of sourcing fuel and pricing control mechanism for various biomass feed-stocks.

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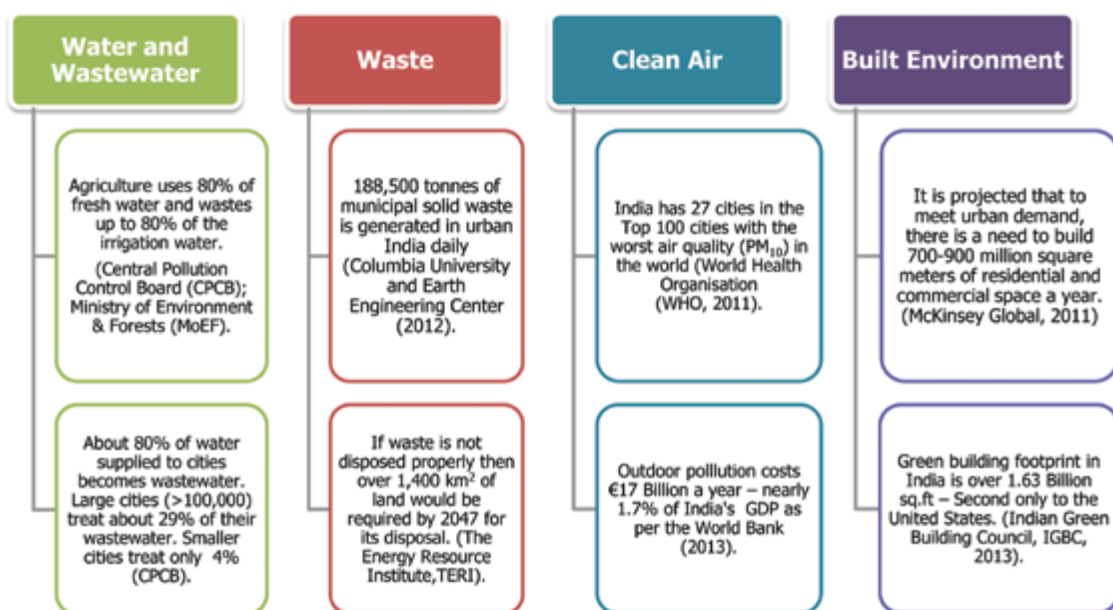


## ENVIRONMENT SECTOR

The environment sector is inherently interdisciplinary and encompasses all other clean technology sectors. EBTC, however, focuses on selected subsectors in India, where the odds of collaborating with EU's companies, clusters and institutes are greater. The key subsectors (Figure 3) are in line with the EU-India Joint Action Plan (2005)<sup>18</sup>. EBTC's environment sector's activities are also in line with the EU's 7th Environment Action Programme (EAP, 2020)<sup>19</sup>. Some of the key features of EAP 2020 are protecting natural capital, encouraging more resource efficiency and accelerating the transition to a low-carbon economy in Europe and worldwide. In India, EBTC will be at the forefront of adapting EAP's concerns for India.

The two primary drivers for the environment sector in India are industrialisation and urbanisation. As the country traverses this modern developmental path, it has to protect the quality of its environment, otherwise the quality of life of its burgeoning citizens may deteriorate, even though India grows richer on the GDP charts.

**Figure 3: Four Elements of EBTC's Environment Sector**



## Institutional, legal and regulatory framework

At the Central level, the Ministry of Environment & Forests (MoEF) is responsible for the formulation of environmental policy and for compliance and enforcement, as it plays the dual role of policymaker and regulator (granting/monitoring clearances). The Central Pollution Control Board (CPCB), under the MoEF, is an advisory body to the Government for the prevention and control of water and air pollution and the improvement in air quality. This structure is mirrored at the State-level with the State Pollution Control Boards (SPCBs). Furthermore, many ad hoc expert appraisal committees (at the Central and State level) play a significant role in the granting of environmental clearances. The Supreme Court has played a key role in setting environmental regulations through public interest litigations. The Supreme Court has decreed that the right to a clean environment is part of the constitutionally guaranteed right to life. At present there are more than 200 acts, rules and regulations that exist at the Central, State and local level that cover environmental issues.

### Water and Wastewater<sup>20</sup>

*According to the Indian Constitution, water (wastewater) is essentially a State matter and the Central Government comes in only in the case of inter-State river waters. The Central Government's role is mainly advisory, for instance, through the non-binding National Water Policy it lays out preferred frameworks for water. However, it is able to impact the functioning of the sector by devising central schemes that offer funds that are often tied with institutional and regulatory reforms.*

As the four broad elements of the EBTC's environment sector – Water and Wastewater<sup>20</sup>, Waste<sup>21</sup>, Clean Air<sup>22</sup> and Built Environment<sup>23</sup> – are disparate, policy barriers and market obstacles differ across them. In the following, the subsectors will be highlighted wherever they show a distinct perspective that sheds some light on the environment sector (as a whole).

## Policy level barriers and market obstacles

Apart from sensitive areas such as real estate, insurance, agriculture and plantation, access to the Indian (environment) market is not restricted to EU SMEs by the Indian Government. However, policy barriers and related market obstacles have made doing business on the ground difficult. The primary issue is that most of the environmental subsectors are in the public service domain where cost recovery through fees is sub-optimal, and therefore public authorities and utilities find themselves in dire straits financially. Further, they also lack the capacity (skills) to function in a business-as-usual manner thereby confining many instances of private sector participation to paper only.

Other barriers and obstacles are either related to the business environment or the practical difficulties of implementation that often keeps projects (and businesses) in abeyance.

- **Poor environmental governance:** The inadequate capacity of existing regulatory institutions at the Central and State levels for both clearance of projects and monitoring, as well as multiplicity of agencies delays clearances.<sup>24</sup> For instance, 25 (out of 35) Indian States do not have full-fledged environmental departments, only SPCBs. Given the multiple layer of clearances required starting from local and State levels to central levels, this lack of capacity at the State level is a major cause of delays.

- **Weak enforcement mechanisms:** Despite the significant number of laws in place, the enforcement mechanisms are quite weak. Sanctions available to the regulator are either too extreme to be routinely used such as shutting down units, or too time consuming to pursue such as filing a criminal case against a company that violates the law.<sup>25</sup>
- **Lack of assessment of environmental impact at sector level:** As per standard practice, assessment of environmental impact is done on a project-by-project basis only. This leads to the same type of projects being evaluated repeatedly adding not only to transaction costs but also leading to delays. For instance, if the sector level assessment is done before the scheme<sup>24</sup>, the Central or State government can lay down norms for the remediation of potential environmental impacts beforehand, saving time and making the sector attractive to investors.
- **Environmental clearances** are required to ensure sound environmental standards. However, they do not give preferred clearance to certified clean technologies until the developers invest in time-consuming demonstration projects. The additional time taken to demonstrate viability either makes the developers uninterested, or delays the commercial induction of the technology.
- **Lack of competition in the provision of public services:** Without competition in environmental subsectors such as water, the economics are purely subsidy-driven and lack the approach to meet the service standards set under the law. The resulting impact on the subsector makes the sector uneconomic and therefore unattractive for solution providers.<sup>25</sup>
- **Poor availability of data:** Environmental agencies suffer from lack of data, be it on the availability or the use of natural resources. In this context, businesses are left to invest in studies to determine the baseline of the project through a feasibility report. But, the data collected is contested among the multiple agencies on the ground and these can enforce regulations (even penalties) based on their limited dataset.
- **Lack of transparency on environmental compliance:** In some environmental subsectors where land use is altered by a project, developers need to submit half-yearly compliance reports to the environmental departments, SPCBs and other relevant departments.<sup>24</sup> As these reports are not displayed transparently, there is room for unlawful harassment of companies that are in compliance, by unscrupulous elements such as monitoring inspectors from multiple departments such as environmental sectors from water utilities as well as non-environment departments such as fire, factories, electricity and labour.
- **Complex procurement norms:** The main barriers with respect to Central and State procurement of goods and services are related to the qualification criteria that are laid down in the specific tender. Over the years, the procurement conditions have become more restrictive and make participation of a European company indirect, i.e. through a joint venture with an Indian firm.<sup>14</sup> Green procurement guidelines for India have been devised in collaboration with the World Bank<sup>26</sup>, with Japan as the role model. However, these guidelines are yet to be implemented.
- **Low-level of public awareness about Public Private Partnership (PPP):** India's future development path is going to depend on how it can tap the latent energy of the private sector and reconcile the needs of its citizens for a better environment and quality of life. In this light, unrealistic expectations about technologies, particularly foreign, lead to a trust-deficit that affects projects (and businesses).
- **Lack of standards for environmental technologies:** In the absence of standards for environmental technologies, the clean technology project landscape is littered with pilot projects<sup>27</sup> that have not scaled-up to address the larger problems they were meant to solve.



## Positive evolutions and market opportunities

Since 1991, India has implemented extensive market liberalisation and economic reforms. These have opened up the country to foreign investment, and created opportunities in the environment sector, including goods and services for clean technologies.<sup>28</sup>

This positive evolution of policy has resulted in the reduction in licensing requirements and also a reduction in restrictive trade tariffs. For instance:

- **There are no policy constraints on foreign direct investment** in any of the clean technology categories either for manufacturing, or for bidding for water treatment projects. For foreign technology collaboration agreements, rules for payments of royalty under the Foreign Exchange Management Act have been relaxed with effect from 2010 and no approval from the Ministry of Commerce and Industries is required for making payments in foreign currencies through authorised dealer banks which may be required for technical collaboration agreements.<sup>14</sup> However, according to the doing business database of the World Bank Group<sup>29</sup>, India is not faring well in translating them into reality.
- **Foreign investment through partnership:** Foreign investors can set up a joint venture with an Indian partner for financial collaboration.<sup>30</sup> However, these JVs are not necessarily working out, prompting many to opt for early break-ups, especially in sectors that allow 100% FDI.<sup>31</sup>
- **Subsidies** include fiscal and financial incentives (e.g. 100% asset depreciation, tax holiday for 10 years) together with the simplification of procedures for private investment. Examples of this are: introducing single window permit procurement, reducing the number of required governmental authorisations, encouraging foreign investors to establish projects on the build-own-operate-transfer model (BOOT), exemptions and reduction in excise duty on the manufacturing of environment systems, and soft loans are provided through nationalised banks and other financial institutions.<sup>28</sup> The incentives in the Built Environment area specified below can be accessed by an EU company indirectly, through a JV.

To sum up, the overall trends in India's policy and regulatory environment are positive. However, the investment climate and business environment (for clean technologies) is still lagging.

## Recommendations to policymakers

Albeit trade based on clean technologies is not discernible in the overall trade volumes, it is clearly destined to become significant in the future. In light of this, the first major concern that policymakers on both sides should address is the need for setting up systems for measuring the green

### The Ministry of New and Renewable Energy (MNRE) provides incentives for Built Environment<sup>23</sup>

*For developers: MNRE provides reimbursement of 90% of the registration-cum-rating fee for projects up to 5000 sq. m of built-up area with minimum 3-star rating, and for projects > 5000 sq. m of built-up area with minimum 4-star rating.*

*For urban local bodies: MNRE provides €60,000 to municipal corporations and €60,000 to other urban local bodies that announce rebates in property tax for green buildings and make it mandatory to get certifications for all new buildings*

*Rebate in property tax for energy efficient solar/green buildings*



aspects of trade by coming to an agreement on standards that will enable cleantech trade to be tracked.

Other opportunities to advance EU-India collaboration:

- As the EU has one of the highest market shares of clean technologies in the world, it should take the lead in collaborating with the Indian Government to structure the Clean Technology Fund (CTF) proposed under India's National Action Plan on Climate Change (NAPCC) jointly thereby ensuring access for EU companies.
- In order to facilitate the entry of environmental technologies in India, the EU should cooperate with Indian authorities in the Central Government as well as States to set-up and empower an Environmental Technology Verification (ETV) regime. A functioning ETV could ensure that clean technology is readily accepted for projects.
- Green procurement norms incorporating 'use of clean technology' in projects as a bidding variable should be considered so that innovative projects can become possible under the standard national or international competitive bidding norms.
- Bottom-up PPP structures are at a nascent stage of development as various platforms such as the India Water Development Programme are looking to bring 'structuring innovation in projects'. A viable PPP is the only way for foreign companies in the environment sector to participate in Indian businesses. Therefore, the EU and India should explore appropriate policy tools such as guarantee and risk mitigation instruments for cleantech projects by, for instance, internationalising innovative EU initiatives such as eco-innovation to India. Furthermore, cleantech PPPs could also receive tailored guarantees through the European Investment Bank (EIB) in concert with the Reserve Bank of India (RBI) that could enable the PPP's project stakeholders to ensure their economic and financial viability, and thus change the future for the better.

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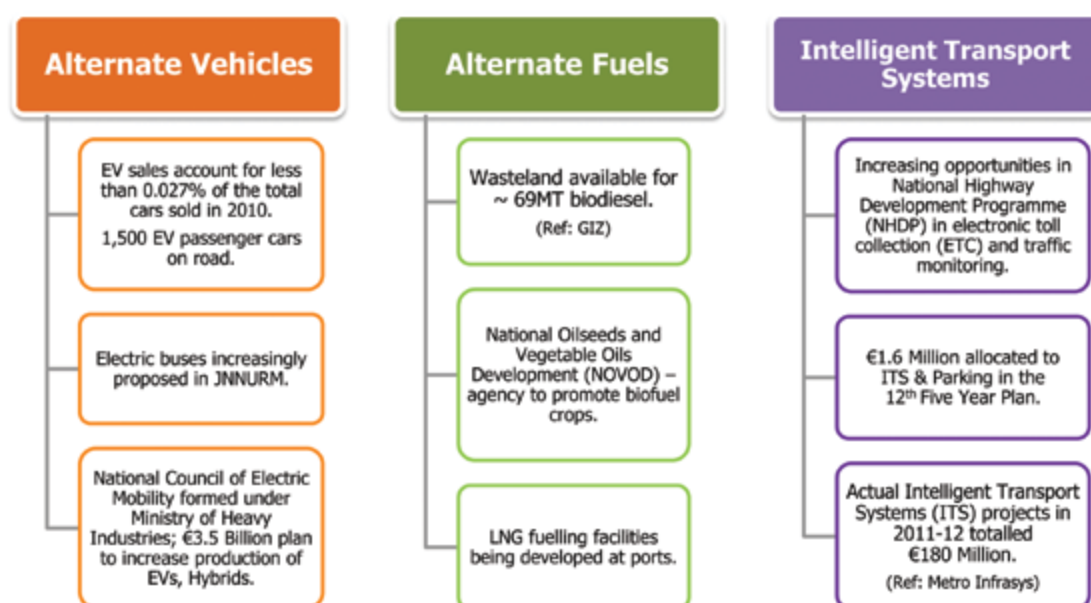
## TRANSPORT SECTOR

### Introduction

Rapid urbanisation, industrialisation and the increasing use of motorised vehicles have caused considerable air and noise pollution as well as a higher energy consumption, with far reaching effects on our climate. According to an International Energy Agency (IEA) report (2008), petroleum used for transport is one of the largest sources of greenhouse gas (GHG) emissions, currently accounting for 23% of global energy-related CO<sub>2</sub> emissions. It is projected to rapidly increase by nearly 50% by 2030, and by 80% by 2050. Indian roads are also among the most dangerous in the world, with high fatality rates, as the number of fatalities on Indian roads has increased to over 70,000 per year. The current capacity at major ports and airports is also overstretched.

With the development of the Golden Quadrilateral (a highway network connecting the four metropolises – Delhi, Mumbai, Chennai and Kolkata), India is seeing a profusion of projects in the transport sector both at urban and rural level. There is an increasing use and adoption of automated ITS technologies, clean automotive technologies and alternate fuels.

**Figure 4: Three Elements of EBTC's Transport Sector**



## Institutional, legal and regulatory framework

Important government level institutions include ministries such as the Ministry of Road Transport and Highways (MoRTH); Ministry of Shipping; Ministry of Railways; Ministry of Civil Aviation; Ministry of Urban Development (MoUD), and the Ministry of Heavy Industries.

At a legal level, several important acts govern the laws related to the transport sector including the Motor Vehicle Act (1988); Central Motor Vehicles Rules (1989); the Road Transport Corporations Act (1950); Multimodal Transportation of Goods Act (1993, amended in 2000); the Indian Carriage of Goods by Sea Act (1925, amended in 2000); the Major Port Trusts Act (1963), the Railway Act (1989), and the Aircraft Act (1934). In addition, several other acts exist regarding urban transport issues, for example the Delhi Metro Railway (Operation and Maintenance) Act, 2002.

## Policy level barriers and market obstacles

Several policies are in place to set guidelines for the transport framework in India, including the National Urban Transport Policy (NUTP), the National Road Transport Policy, and the Auto Fuel Policy of India. According to the NUTP and other existing literature, the current structure of governance for the transport sector does not provide the right co-ordination mechanisms to deal with urban transport. Some of the shortcomings identified are described below:

- The central Government has recommended setting up **Unified Metropolitan Transport Authorities (UMTA's) in the most densely populated cities** (>1 million inhabitants), to facilitate better co-ordination and implementation of urban transport programmes and projects as well as establish an integrated management of urban transport systems. Some of them have already been set up. However, such Authorities would need statutory backing in order to be meaningful.<sup>32</sup>
- The **lack of a central and State-level database on urban transport statistics** has severely constrained the ability to formulate sound urban transport plans and to reliably assess the impact of the implemented initiatives. A national level institute would build up a database to be used in planning, research and training in the field of urban transport.<sup>32</sup> Similarly, the **lack of a nationwide data archive** is also a hindrance for the implementation of an Intelligent Transport Systems (ITS) architecture and citywide implementations.<sup>33</sup>
- The **monopoly position of Indian Railways** makes it difficult to do business, despite the fact that Indian Railways is trying to attract the private sector through PPP projects.<sup>34</sup>
- **Outdated regulatory framework** hinders the development of certain sub-sectors. For example, the Multimodal Transport of Goods (MTG) Act (1993) is outdated in terms of recent developments in integrated logistics. It suffers from several shortcomings, such as the exclusion of air freight operators, exclusion of imports, requirements of annual renewal of the multimodal transport operator (MTO) licence and higher liabilities for the operator.<sup>34</sup>

*Multiple laws are a major concern and result in redundancies. Some of the laws governing the access control to national highways are the National Highways Act (1956), the National Highways Rules (1957), the National Highways (Land and Traffic) Act (2002) and the Highways Administration Rules (2003). Similarly, the laws governing inter-state movement of goods are the Central Sales Tax Act (1956) and the various State Sales Acts. The law governing inter-state movement of vehicles is the Motor Vehicles Act.*

- **Cumbersome regulations and procedures** resulting from the diverse jurisdiction of multiple ministries and departments, manual and segregated sales tax administration, vehicle registration/ license records and regulatory and inspection functions are still being fully carried out by Government agencies. <sup>34, 35</sup>
- In many subsectors, regulations are still evolving, so there is **uncertainty about compliance of rules**. For instance, India is in the process of initiating a postal bill which is likely to impact on the operations of courier and express companies. Subsequent to the privatisation of airports, there is a new regulator in the form of the Airports Economic Regulatory Authority of India (AERA). Some EU companies have made substantial investments in ground handling and now they are not sure whether India will impose restrictions on the number of ground handling agents. They are also doubtful about the future pricing model in privatised airports. <sup>34</sup>
- The **lack of a regulatory framework** including standards, guidelines and a nationwide ITS implementation architecture is a shortcoming, which gives rise to compatibility and inter-operability issues, hindering the implementation of ITS systems in India. <sup>33</sup>

There are several other issues that hinder or discourage foreign companies from participating and implementing transport-related projects in India. Some of these issues are:

### Procurement

- There are **delays in the awarding of contracts, complex tender approval processes**, due to monopoly-related inefficiencies, land acquisition challenges and bureaucracy. <sup>34</sup>
- Due to the Government monopoly in the railway market, **private players are not allowed in passenger train movement**, except in the case of mass rapid transport. <sup>34</sup>
- Several **permit procedures cause inordinate delays**. In many States it is not easy to obtain a transport permit. It takes 15 days to get a transport permit in West Bengal, compared to 1-2 days in Maharashtra. Significant time is spent at toll booths, because they are not open round the clock and are not computerised. <sup>34</sup>
- **Inefficient project budgeting and lack of contingency costs** cause projects to deviate from original budgets with large variations. <sup>36</sup>

### Subsidies – Centre- and State-level

- Indian Railways has the policy of cross-subsidising passenger charges through freight charges which leads to **higher freight costs**. The average passenger tariff of Indian Railways is 55% lower than it is in China, while the average freight tariff is 66% higher. <sup>34</sup>
- The existing **systems of sales tax administration, vehicle registration, issuance of driving licences and its records system are predominantly manual and vary from State to State**. The motor vehicle tax is levied on the basis of gross vehicle weight rather than on potential axle loads. This results in under-taxation of 2-axle trucks, when compared to multi-axle vehicles (MAVs). Manufacturers point out that the customs duty is higher for cars than for auto-components and/ or aeroplanes. <sup>34</sup>
- **Three “sensitive” petroleum products—high-speed diesel, domestic LPG and kerosene—are sold at below-benchmark international prices**, which leads to under-recoveries for the downstream oil marketing companies (OMCs). Under-recoveries have only been partly made up in the past by cash compensation from the Government and burden-sharing by upstream national oil companies. <sup>37</sup>



## Standards, specifications, testing, labelling

- In the logistics sector, most **warehouses in India have manual facilities, and lack bar-coding and scanning facilities**, causing delays and time consuming procedures. <sup>34</sup>
- **Physical inspections by customs, multiple documentation requirements and bribes** have been cited as common barriers. Although Customs has implemented Electronic Data Interchange (EDI), the technology is outdated. The process is slow because it requires physical images of invoices, consignee authorisation, import-export codes and airway bills that are not required in other countries. <sup>34</sup>
- There are also **differences in technical standards between India and the EU**. EU tyre, railway wagon and trailer manufacturers pointed out that, due to differences in technical standards, they have to re-orient or customise their products for India. There are even State-level variations in standards: for example, each State has its own specifications for the trailer length it will allow. <sup>34</sup>
- **Ambiguity in design and engineering specifications** causes delay in arrival of detailed drawings by consultants. <sup>36</sup>
- The **heterogeneous nature of Indian traffic conditions with non-motorised transport, 2- and 3-wheelers**, make it very difficult for technologies implemented and tested in developed countries to be adapted to India.

## Lack of infrastructure

- Transport providers point out that the **lack of physical infrastructure** is a major barrier. Although the government has focused on investment in improving highways, there are still capacity shortages and the quality of State highways and local roads needs to be improved; poor road conditions affect the longevity of vehicles. Similarly, congestion at ports, lack of cold chain facilities and lack of hinterland connectivity cause delays. <sup>34</sup>
- **Low domestic availability of advanced electronics and controls and high-cost of battery technology**, hinder the development of electric and hybrid vehicle technologies. Similarly, the high cost of technologies is also a deterrent in the development of ITS technologies. <sup>33, 38</sup>

## Shortage of skilled labour and poor skill-levels of staff

- In all sub-sectors, **workers lack skills**. For example, drivers do not have the correct training or the ability to read road signs, thus causing delays and accidents. In addition, cashiers at toll booths lack the training and computer skills required for the job. The number of staff required is also inadequate at many booths. In the absence of competent skills to manage traffic, there are traffic jams and delays. <sup>34</sup>

## Capacity Constraints

- Much of the transport infrastructure in India, including ports and airports, suffers from **capacity constraints that cause delays, congestion and fuel wastage**. Ships have long waits for berthing, loading and unloading. Vessel turnaround time and waiting time in India are much higher than in international ports, because ports do not have the capacity to accommodate large ships and can only accommodate feeder vessels; this results in delays during trans-shipment. <sup>34</sup>

## Eco-Friendly Vehicles

- Eco-friendly vehicles, like battery-operated cars, do not have a mass market in India for several reasons: **insufficient re-charging stations, power shortages, high cost of power, and insufficient**

**refuelling facilities for Compressed Natural Gas (CNG) across cities.** There is a lack of clarity in the bio-ethanol/bio-fuel policy and there are policy inconsistencies at the Centre and State level. According to the Indian Constitution, potable alcohol is regulated by States, whereas alcohol for industrial units and for fuel purposes is a central subject. As a result, each State has its own tax structure, rules and regulations. This has affected free movement and uniform and rational pricing of ethanol for blending purposes. India is also yet to have a safety standard for hydrogen gas fuel. <sup>34</sup>

## Taxation

- **VAT** has been cited as an issue for components used in the production of electric-mobility automotive parts.
- **In India, overall tariffs are higher on goods than those of the EU.** Since 2005, most of the items in the transport sector that are imported from the EU (i.e. aeroplane and aircraft) face low tariffs of only 3%, however, the tariff for motor cars and motor vehicles for personal use (including luxury cars) have a high tariff of 100%. <sup>34</sup>

## Positive evolutions and market opportunities

There is immense potential in applying sustainable transport solutions to reduce toxic emissions, save energy and reduce space requirement and its subsequent urban sprawl by using elements of sustainable transport and technologies. At the Central and State level, several incentives have been laid out that will give a boost to foreign companies wanting to enter the Indian market. Some of these are as follows:

### Central Level

- 100% FDI is allowed in logistics and warehousing.
- Non Resident Indian (NRI) investment is permitted up to 100% under the automatic route. However, no direct or indirect equity participation by foreign airlines is allowed. FDI up to 49% is permitted for scheduled air transport services and domestic scheduled passenger airlines under the automatic route. <sup>36</sup>
- FDI up to 100% is allowed under the automatic route in mass rapid transport systems, including the associated commercial development of real estate, in all metropolitan cities. <sup>36</sup>
- Up to 100% FDI is allowed through the automatic route for the leasing of existing assets of ports, construction and maintenance of assets, leasing of equipment for port handling and leasing of floating crafts and captive facilities for port-based industries. <sup>36</sup>
- FDI up to 74% is allowed for the following activities (subjected to prescribed conditions): basic, cellular, unified access services, long-distance, V-sat, public mobile, radio trunk services, global mobile personal communication services, Internet service providers with gateways, ISPs not providing gateways, Radio paging and End-to-end bandwidth. <sup>36</sup>

### State Level

- The Delhi government gives a 30% subsidy on electric vehicles (EVs) from the Air Ambience Fund.
- The Maharashtra government gives full tax exemption on electric vehicles.

Apart from these incentives, several initiatives have been undertaken in recent years by Indian agencies to enhance sustainability and clean technologies in the Indian infrastructure. These initiatives present

opportunities for foreign companies to join hands with Indian counterparts through various private-public partnerships. Some of them are as follows:

- The 12<sup>th</sup> Five Year Plan planned investments in the transport sector total €60 Billion of which €31 Billion is estimated to be in public transport.
- The Jawaharlal Nehru National Urban Renewal Mission (JNNURM) scheme aims to integrate the development of infrastructure services in cities, ensure adequate funds to meet the deficiencies in urban infrastructure services and establish linkages between asset-creation and asset-management through reforms for long-term project sustainability.
- There are increasing opportunities in alternative vehicle technologies (Electric Vehicles, Hybrids) and fuel technologies (Biofuels, Fuel Cells, Hydrogen) both in industrial and research sectors. <sup>38</sup>
- The major ports are being augmented for capacity with a focus on the development of container freight stations, the creation of multimodal logistics parks and LNG fuelling. <sup>38</sup>

## Recommendations to policymakers

Studies indicate a great interest of EU companies in the transport and logistics sector of India. <sup>34</sup> Several policy and other barriers, which create obstacles to companies, in general, and to foreign companies, in particular, have been described. The analysis of these issues indicates that some of the major areas of concerns that need to be considered, include the following:

- The basic lack of infrastructure and its surrounding issues, including (non)-availability of power, land acquisition and procurement issues as well as permit and clearances, are all often cited by foreign companies as deterrents. Despite improvements in the past decade in improving highways, capacity shortages and inadequate quality of State highways and local roads prove to be a problem, along with congestion at ports, lack of hinterland connectivity and lack of cold chain facilities. It is recommended that public sector projects focus on redressing these shortcomings. <sup>34</sup>
- EU companies exporting to India have voiced the opinion that they will benefit if overall tariffs for motor cars and motor vehicles are reduced. <sup>34</sup>
- Indian and EU companies point out that India and the EU are not harmonised markets and that companies would benefit from the harmonisation of technical standards. It should be a target to align standards in EU and India, in order to lessen the need for EU products to be reoriented or vastly redesigned to comply with different Indian standards.
- Harmonisation and simplification of customs procedures (including clearances and physical inspection) and standards will facilitate trade. <sup>34</sup>
- For technology intensive sub-sectors of transport, like ITS, the biggest challenge is to recognise the heterogeneous nature of traffic conditions in India and implement ITS technologies accordingly. <sup>33</sup>

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## INTELLECTUAL PROPERTY RIGHTS

### Introduction

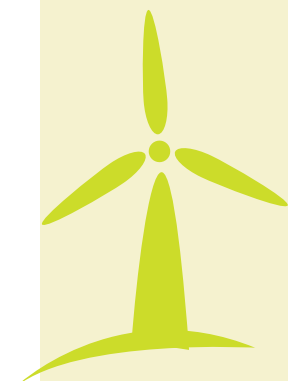
Intellectual property (IP) refers to creations of the mind: inventions, literary and artistic works and symbols, names, images and designs used in commerce <sup>39</sup>. The Indian IPR framework includes The Indian Patent Act, 1970; The Indian Trade Mark Act, 1999; The Design Act, 2000; Geographical Indications of Goods (Registration & Protection) Act, 1999; the Protection of Plant Varieties and Framers' rights Act, 2001; The Semiconductor Integrated Circuits Layout-Design Act, 2000; and The Indian Copyright Act, 1957 <sup>40</sup>. Some of these Acts were amended to conform to the TRIPS regulations after India became a signatory of the TRIPS Agreement<sup>41</sup>.

### Institutional, legal and regulatory framework

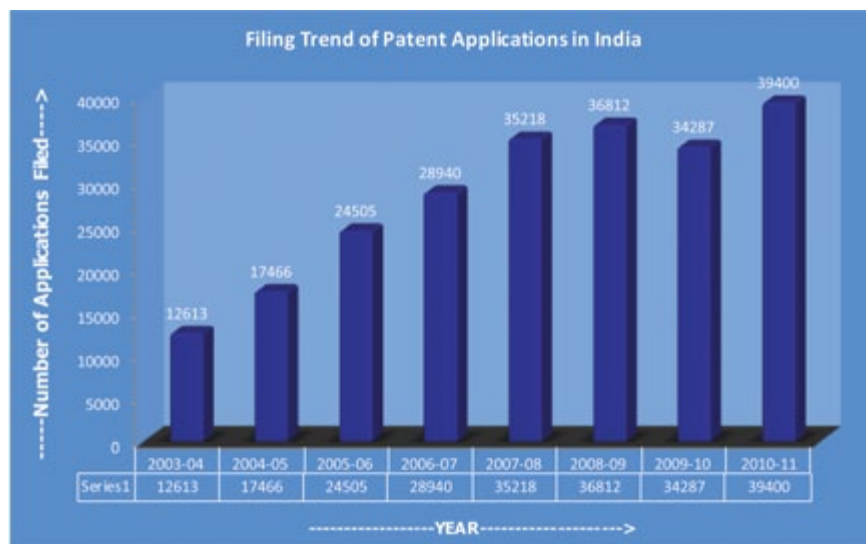
The patent system in India is administered under the supervision of the Controller General of Patents, Designs, Trademarks and Geographical Indications (CGPDTM), appointed under sub-section (1) of Section 3 of the Trade Marks Act, 1999 <sup>42</sup>. The Office of the Controller General of Patents, Designs and Trade Marks works for the Department of Industrial Policy and Promotion, Ministry of Commerce and Industry. The Office of the CGPDTM is located in Mumbai, and patent offices are located in Kolkata, Chennai and Delhi <sup>43</sup>.

IP protection around the World is based on jurisdiction. Each country has its own set of IP rules, regulations, and Acts, as long as they are in accordance with the TRIPS agreement. India, being a signatory part of the WTO, is no different. The TRIPS agreement provides a broad framework, under which each country can draft its own Rules, Regulation and Acts <sup>43</sup>. This broad framework also gives liberty to draft rules related to compulsory licensing and provisions for safeguarding national and public interest.

**IP trends in India:** A continuous increase in filing of Patents and Trademarks can be observed from the filing trend prepared by referencing the Annual Report 2010-11 published by the Indian Patent Office <sup>44</sup>. The filing data includes filing by both Indian and foreign companies.



**Figure 5: Trends of Patent Applications and Trademark Filing in India**



The trends are encouraging from the IPR perspective. However, there is a considerable backlog of applications which are awaiting examination.

The patent offices in India have a severe constraint in terms of trained manpower. As per details published in the Annual Report 2010-11, the total number of examiners working in the Technical field as on 31<sup>st</sup> March, 2011 was 79. This number is extremely low when compared to the total number of applications being filed <sup>44</sup>. The total number of convention applications filed by foreign applicants stood at 3728, which displays an increase of about 24.84% in comparison to the previous year (2986). Most of the foreign applications were filed through the PCT National Phase route. The number of such applications filed during the reporting year was 26544, which is approximately 13% higher as compared to the previous year (23431). Germany (2991), France (1426), Switzerland (1335), and The Netherlands (1292) were among the top filers from Europe <sup>44</sup>.



## Policy Level Barriers and Market Obstacles

IP cuts across all the EBTC sectors and is important in order to recover the investment made in R&D and in developing new and innovative technologies. Thus, IPR issues arise in all sectors, even though their type and context may vary from sector to sector. The enforcement of IP rights in India is weak and requires improvement. Some of the important issues are discussed below:

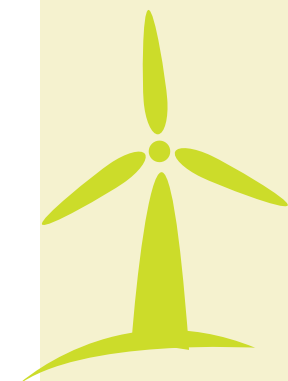
### Procedural and Bureaucratic delays

- **Procedural and bureaucratic delays** in administration are the main concern in IP enforcement. This is further aggregated by a large backlog of cases at both the civil and criminal courts <sup>45</sup>.
- **Lengthy pre-grant opposition procedures and limited capacity of Indian patent offices** are a bottleneck for the biotechnology and the pharmaceutical industry in particular because they act as a barrier to the granting of a patent even in genuine cases. In principle, it creates a barrier for European companies as the pre-grant opposition to a patent application can take a couple of years for examination at a patent office. Furthermore, in spite of the effort by Indian government, the patent law changes are yet to yield meaningful patent protection results.
- Many European countries have a utility patent system in place. It is an excellent system if used properly, but improper use can lead to negative effects. Indian patent offices are already overloaded with patent backlogs. The **introduction of a utility patent system will further burden the already overloaded patent offices in India, and, moreover, it may result in proliferation of low-quality IP rights.**
- There is a substantial backlog of patent applications in the Indian Patent Office <sup>46</sup>, especially for pharmaceutical and biotechnology related inventions. This **backlog of pending applications significantly reduces the recovery of costs incurred on R&D**, since it delays the launch of new drugs into the Indian market.

### IP in clean technologies

- Based on the finding of a report by the International Centre for Trade and Sustainable Development (ICTSD)<sup>47</sup>, it is clear that the impact of IP varies from sector to sector. It is also apparent that patented technologies were directed to protect specific improvements. The core technology in photovoltaic (PV) cells is freely available. In bio-fuels there were no barriers in accessing state of the art technology. Wind energy technologies seem to be most affected by strong IP protection. The findings in the renewable energy sectors, apart from wind energy, are those of significant obstacles related to trade barriers and distortions rather than being related to IP. In view of the above findings, it is unjustified to include a provision of compulsory licensing <sup>48</sup> in the New Manufacturing Policy (NMP) <sup>49</sup> for clean technologies. **The NMP available at the website of the Ministry of Commerce, introduces compulsory licensing in Green and Clean technologies. This is a concern for European companies. The compulsory licensing introduced in the NMP proposes to set up a Technology Acquisition and Development Fund (TADF) <sup>49</sup> to acquire environmentally friendly technologies for patent pooling as well as for licensing these technologies to Indian companies.**

Furthermore, a patent holder may be unwilling to part with the patented technology or might be reluctant to licence it at a cost proposed by the licensee. In such circumstances, the TADF will



have the option to approach the Government with a request to issue a Compulsory License for IP protecting that technology. This will create a barrier for EU companies. Many companies will refrain from setting up operations in clean technologies considering that their technologies will be subjected to compulsory licensing, if they fail to provide a voluntary license to the TADF. If a compulsory license is granted to TADF for clean technologies developed by the European company, it will be extremely difficult for the EU company to recover the cost of developing the technology.

## Compulsory licensing

- In a recent judgement, the Controller of Patents issued a compulsory license to NATCO, an Indian generic pharmaceutical company against a European multi-national company Bayer AG.<sup>50</sup> This compulsory license was issued for the drug Nexavar (sorafenib), an oncology drug that extends the patient's life but does not cure the underlying condition. The granting of compulsory license in India is provided under section 87 of the Indian Patent Act.<sup>48</sup> The necessary conditions for the granting of a compulsory license are (a) public interest, (b) affordable price, and (c) not working of patents in India. The matter is currently pending in the Bombay High Court.

In summary, the **issue of compulsory licensing has created non-tariff related barriers for European companies restricting European companies to bring patented drugs into India.** Furthermore, the European companies are likely to restrict their investment in R&D considering a weak IP regime in India.

- The term 'affordable price' is subjective and cannot be used as an excuse for justifying the grant of compulsory licensing. Whereas a reduction of the price of sorafenib from approximately €3339 to €105 by issuing a compulsory license to an Indian company (Natco) has made it accessible and affordable to all patients in India is debatable, even at €105, the average Indian based on per capita estimates will be unable to purchase the drug. In absence of correct interpretation of the term 'affordable price', European organisations are likely to suffer and operate under the fear of compulsory licensing.
- Indian Patent Law also provides for immediate compulsory licensing for the protection of pharmaceutical products in case of Government notification of a public health crisis or of exports to countries with insufficient capacity to manufacture drugs to address public health problems.<sup>51</sup> Such a provision is also an obstacle to European companies.

## Data Security and Trade Secret Law

- **Data security is one of the major issues currently being faced by European companies.** The issue is related to confidentiality of the data aggregated over years for developing software or hardware across industries. The banking and the pharmaceutical industry also face similar issues. There are no stringent laws to protect data of commercial use in India, and this creates a barrier for many EU companies interested to use India as low cost hub for software development.
- **Absence of trade secret law<sup>52</sup> in India is another barrier for European companies.** Europe has a large number of SMEs that have developed and protected technologies by keeping them secret over years. European countries have strong trade secret laws to protect their interests. On the contrary, India does not have a trade secret law and, therefore, technologies protected by trade secret can only be protected contractually in India.

## Collaborative Research challenges

- **IP protection for joint research projects is becoming even more challenging and the amount of time required to manage IP issues is ever increasing** thereby creating a barrier for European organisations. Government funded research institutions and research organisations are becoming more stringent in asking for shares in IP, generated in the research project. These collaborative research projects were earlier easier to manage and amicable solutions on most IP terms could be easily negotiated. Many European companies are interested in using the low cost research market of India for on-going research. However, in certain cases where the researchers/technologists agree on research collaboration, they then fail to agree on IP distribution.

## Shortcomings in the Indian Patent Act and workings of Indian Patent Offices

- The Indian Patent Act, 1970 requires the patentees and licensees to provide information on the working of patents through Form 27 as per section 146 of Indian Patent Act, 1970. It has been pointed out that this provision may result, in some cases, in the **outflow of marketing information from the foreign companies to their Indian and foreign competitors**.
- In certain cases, there is an uncertainty on the granting of the patent because of Section 3(d) <sup>53</sup> of the Indian Patent Act, 1970. This is the section that was devised to stop ever-greening of patents by excluding from patentability any derivatives of known substances. This provision requires adept knowledge of medical efficacy data and a high level of competency in related fields to distinguish between patentable and non-patentable disclosures. On the whole, they create a barrier for European companies. Additionally, the absence of 'patent term restoration'<sup>54</sup> in the Indian patent law will create another barrier for European companies.
- Multinational companies manufacture drugs at specific locations to achieve economies of scale, quality control, and availability of technology for manufacturing processes. It is therefore important to consider imported drugs as equivalent to the working of patents in India.
- EU companies operating in biotechnology are in a disadvantageous position due to the lack of a provision in Indian law for data protection and data exclusivity for clinical trial data in order to obtain marketing approval of pharmaceuticals and chemical entities.
- The recent case of parallel imports<sup>56</sup> pending with Supreme Court will be important in providing direction on sale of parallel goods in India. This case will decide "...whether the provisions of the Trade Marks Act 1999 (India) provided for the import of goods as an infringement and, if so, whether it included genuine products emanating from the proprietor on the international market without the proprietor's consent...<sup>55</sup>". Unless there is clarity in the law regarding parallel imports, it is likely to create a barrier for European companies with respect to parallel imports.

## Positive evolutions and market opportunities

In *Bajaj Auto Ltd. vs TVS Motor Company Ltd*, the honourable Supreme Court of India observed "...relating to trademarks, copyright and patents ... and the hearing of the suit in such matters should proceed on day to day basis and the final judgment should be given normally within four months from the date of the filing of the suit <sup>56</sup>". Even the highest court in India is concerned about the delays in hearing of IP cases. The direction by the honourable Supreme Court of India to accelerate the hearing of IP cases is a positive evolution in the direction of protecting IP rights in India.

## Recommendation to Policymakers

- Increase the number of judges and further digitalise the judicial system to get rid of the huge backlog of pending cases at various Indian courts. It is also recommended that in the interest of both India and Europe, the competency of the judges is increased to handle IP cases across the country. It is suggested to appoint special judges for fast examination of IP cases.
- Amend section 146 of the Indian Patent Act, 1970, to prevent any leakage of marketing information to competitors provided by the patentee to the patent office as required by the Indian patent law. In addition, systematic planning is required for increasing the skilled manpower in the patent offices for faster examination of the patent cases.
- Conduct a proper due diligence before adopting a utility patent system in India and further ensure that it does not create frivolous patents.
- Amend certain provisions in new manufacturing policy (NMP) so that it does not create a barrier for European companies to bring state of the art clean technologies into India. The provision of compulsory licensing should be withdrawn from NMP.
- The Government of India should provide specific guidelines for compulsory licensing. Furthermore, these guidelines should be based on fair use and on consideration that a large investments required for new pharmaceutical research.
- Strong data security and trade secret law should be incorporated to reduce barriers of trade for European companies that have IP in form of trade secret law.
- Patent term restoration should be provisioned within the Indian patent law. In the majority of cases, the prosecution of patents in India is inhibited due to the lack of capacity of the Indian Patent Office (IPO) to prosecute patent applications. This should not adversely affect the patentee. These considerations are true for patented technologies in all sectors but are more important for biotechnology/pharmaceutical related patents.
- It is absolutely important for India to improve the fight against counterfeiting and piracy. The term 'piracy' should be interpreted in a broad way and IP law, especially at borders and customs, should be adequately implemented. It is reported that a substantial number of products infringing IP rights originate from India.

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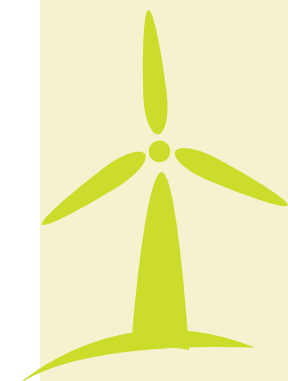
## CONCLUSIONS

Market access issues, when viewed from the perspective of sectors that fall under EBTC's mandate, would include, but not be limited to, competition, procurement issues, quantitative restrictions, standards, specifications and other technical norms and subsidies. Each of the EBTC sectors outlined in the report is subjected to these issues differently; however, there is also a set of common concerns.

### Common market access obstacles across EBTC sectors

Some common concerns that stand out across all EBTC sectors include:

- **Trade in clean technologies is not discernible in the overall trade volumes.** In light of this, policymakers on both sides should set up systems for measuring the green aspects of trade by coming to an agreement on standards that will enable cleantech trade to be tracked.
- **A weak and cumbersome regulatory framework hinders the development of selected subsectors of EBTC.** Even in sectors where regulatory reform has resulted in new policies, its interpretation by Government, judges and society stakeholders is not uniform, therefore, making it difficult for a company to orient its business plans.
- **Almost all sectors and subsectors of EBTC are to the greatest extent 'nascent' and fall under the 'concurrent list',** meaning that, whilst there are central regulations, each State has its own interpretation and implementation of these regulations. Hence, what might work in one State sometimes may not be replicable in another, even from a fundamental business model perspective.
- Although few subsectors, for instance solar (photovoltaic), have benefited from national missions dedicated to promote them, most clean technology sectors have not received similar treatment. Thus, in the **absence of policies or specific regulatory frameworks to support subsectors** such as biomass, smart grids, intelligent transport systems and genetically modified crops, the business environment for these subsectors has languished in comparison.
- **Delay in project implementation in almost all infrastructure projects** (possibly due to lack of clarity on the scope of the work, leading to issues in finalisation of project outline, appropriate choice of technology, lack of efficient project management culture and limited expertise) is making the entry of EU SMEs into India difficult.
- A **mismatch between standards, specifications and testing procedures**, or the outright lack of them, causes delay in project execution, management and completion.
- An **archaic system of sales tax administration, registration, issuance of licences and permits** (often on an annual basis) diverts productive time. The submission of forms and the record systems are often still on a manual basis and vary from State to State. IT platforms have not yet been created as a true one-stop shop for enterprises.
- **Capital subsidies and accelerated depreciation** encourage false (uneconomic) pricing for products and under-recoveries for the investing companies.
- **Procurement issues** including delays in the awarding of contracts, government monopoly in certain sub-sectors, and non-uniform qualification criteria, continue to be a source of frustration for new entrants to the Indian market.





## Recommendations to policymakers

**Policymakers** in India and the EU have to visualise these different contexts and collaborate in areas that are mutually beneficial to each other, in a broad manner. Some of the cross-cutting problems that need to be overcome are:

- **Private sector participation** is limited to certain activities across each sector. Although the Government of India has embraced private sector participation, many of the PPPs have been discouraged by challenges in procurement procedures, bureaucracy, and other issues cited earlier. Suitable modes of private sector participation should thus be encouraged for the uptake of clean and green technologies across all sectors. Furthermore, the EU and India should put forward appropriate policy tools to reduce risk and offer guaranties to the project stakeholders to enable the economic and financial viability of PPPs.
- **Developing unified metropolitan governance agencies** and institutional mechanisms along with statutory backing would go a long way in improving coordination and implementation of urban programmes and projects. This could integrate the management of urban infrastructure systems such as waste management, public transport and power distribution.
- **Even though the regulatory framework is adequate and up to date, there is still a need to assure its enforcement.** There has been mixed performance across States regarding monitoring and enforcing activities, the implementation of regulatory measures such as RPOs, effluent discharge and air emission limits both in industries and vehicular fleets, resource conservation like water, energy efficiency builds confidence and the incentives to invest in clean technologies. These shortcomings in performance need to be addressed.
- **Green procurement norms** incorporating the 'use of clean technology' in projects as a bidding variable should be considered so that innovative projects can become possible under the standard national or international competitive bidding norms.
- **In order to implement a strong IP regime in India,** it is recommended that capacity building measures be undertaken at all levels among IP stakeholders.

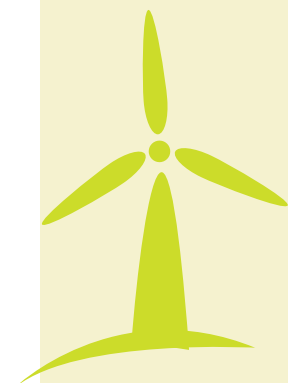
## Recommendations for EU SMEs entering the Indian market

Despite the market access (and establishment) challenges outlined in the earlier sections of this publication, India offers definite advantages in the form of a rapidly expanding market and new avenues for innovation-linked growth. Some of the areas where EU SMEs can gain inroads into the Indian market are:

- **As India is a price sensitive market, the key is to have a long-term strategy.**
- The process of adapting technologies to local conditions is often challenging to achieve in practical terms, presents hidden costs and requires risks. It can take a substantial amount of time to finalise agreements with Indian companies and until a return on investment is achieved.<sup>14</sup> Therefore, it is needed to identify the right partners.
- **Gain better understanding of existing government incentives,** including Central and State level subsidies for FDI and soft loan provisions, tax and duty relief for long-term sustenance in the Indian market. These include policies, laws, systems, fees and surcharges which can vary from State to State.

- **EU SMEs considering entering the clean technology sector must ensure that they fully understand the challenges** related to scale and different trading and cultural environments encountered in India, while doing business.
- While gaining an understanding on the issues related to differences in standards, testing and certifications between the EU and India, also **be cognisant of the adaptability, scalability and cost issues of bringing tried and tested EU-technologies to the Indian market.**
- **Turn challenges into opportunities.** The rapid urbanisation and subsequently expanding markets have resulted in severe capacity constraints of the existing infrastructure, including roads, ports, water, air quality, power and pharmaceuticals. These constraints point to the ever increasing need to adopt technologies that alleviate infrastructure bottlenecks and, therefore, to increasing opportunities for EU SMEs.

The list of market obstacles and recommendations represent a synthesis of the different studies and reports that EBTC has produced in the past years. It offers a snapshot of the challenges at hand and how these could be dealt with, first and foremost by policymakers, but also by providing the right guidance and assistance to those companies trying to gain ground on the Indian cleantech market. Via the twin approach of advocating for the reduction of these barriers on the one hand and stimulating concrete collaborations between European and Indian companies on the other hand, EBTC is capable of supporting the entry into India of EU SMEs at a policy and business level. This unique combination inherent in the mandate of EBTC enables it to pass on to policymakers the market intelligence that was obtained first-hand from the interactions with European companies as well as the synergies with partner organisations. EBTC is thus looking forward to receiving new enquiries and insights from representatives of the public as well as the private sector and invites readers to continue the dialogue beyond this report.

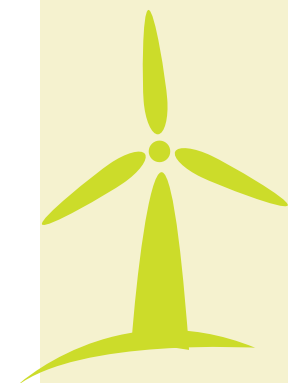


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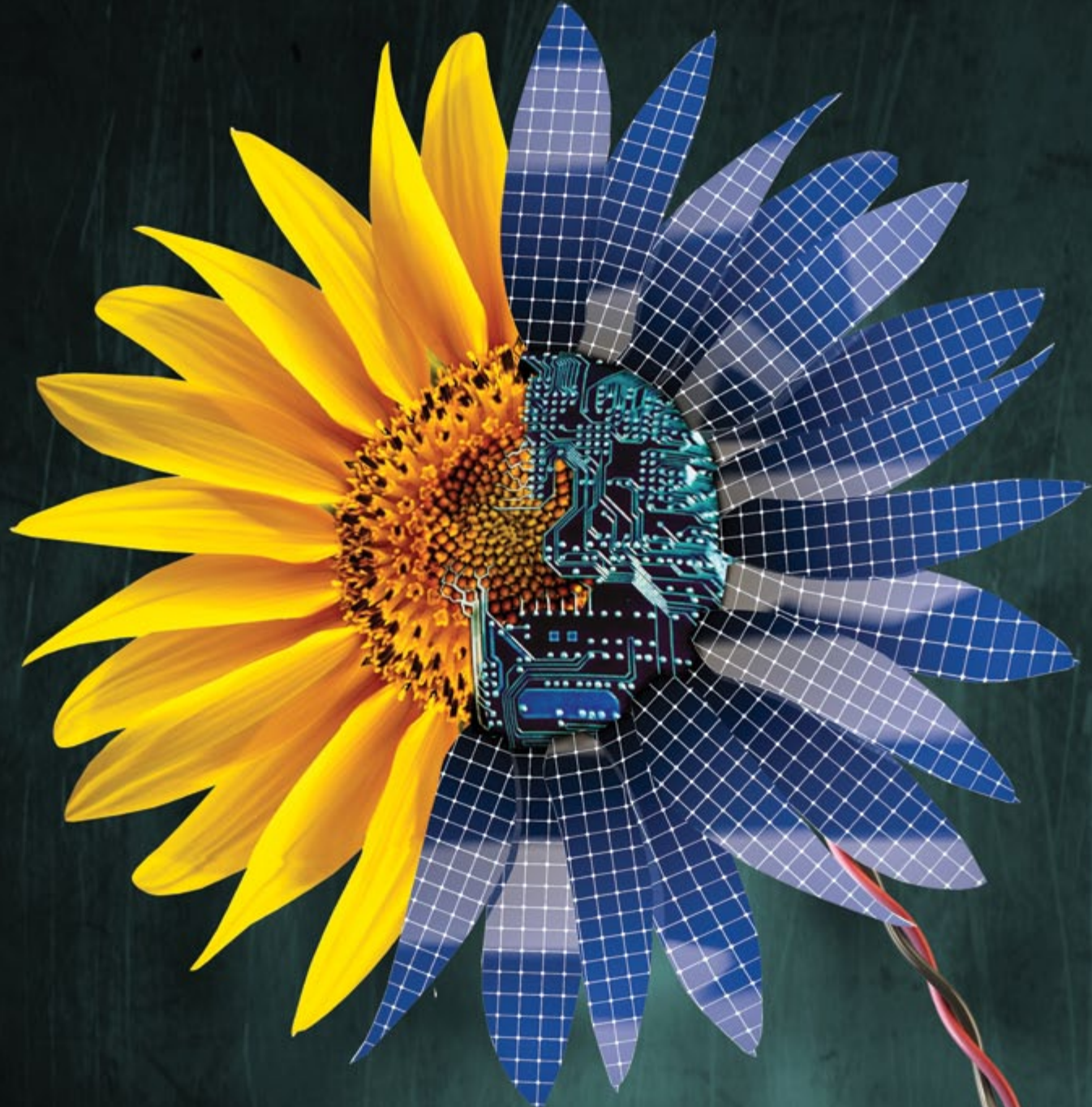
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