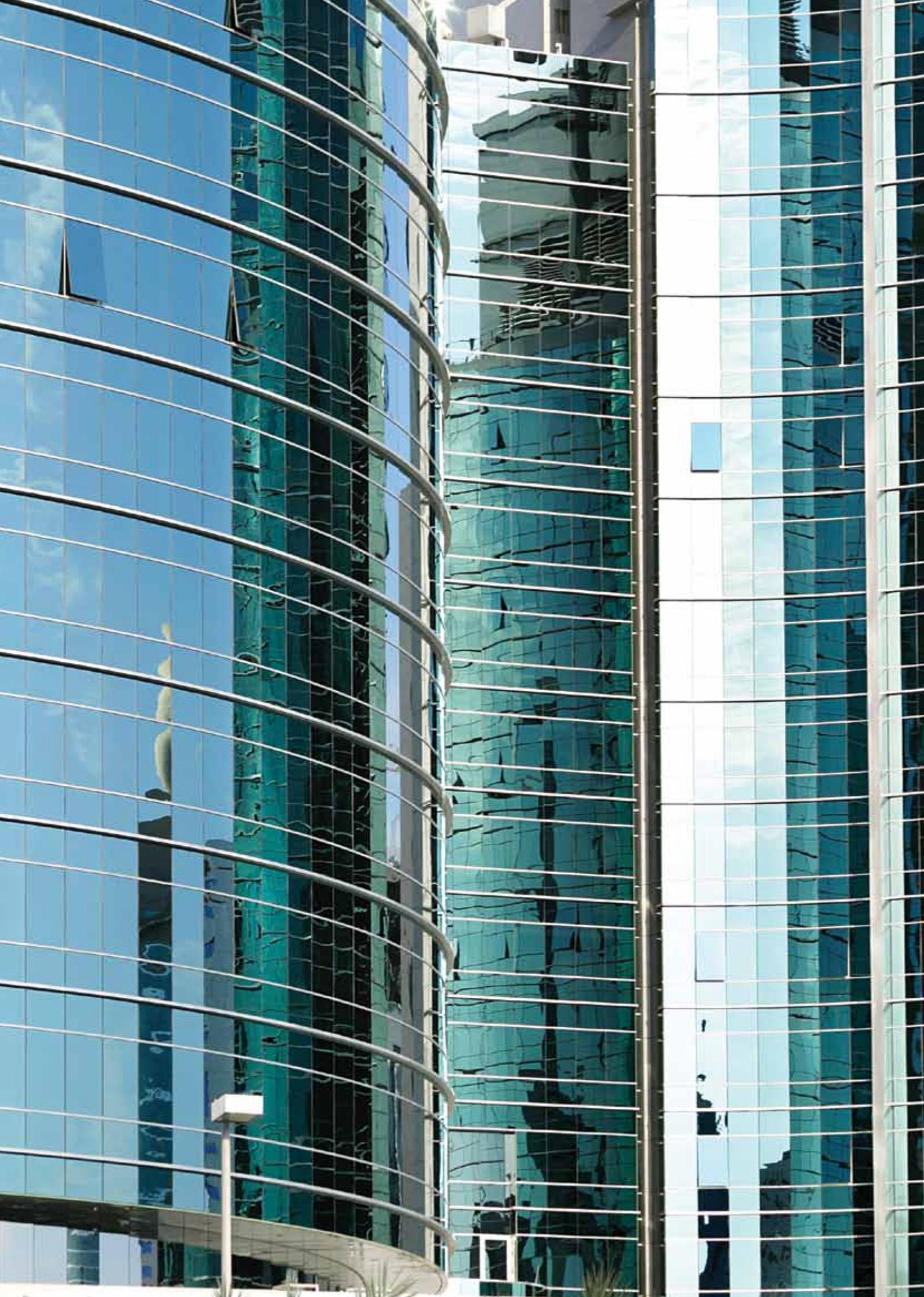

Energy Efficiency Bears Fruits For India Inc.

November 2015



Report writer and global implementation partner

 **accenture**strategy





ऊर्जा दक्षता ब्यूरो

(भारत सरकार, विद्युत मंत्रालय)

BUREAU OF ENERGY EFFICIENCY

(Government of India, Ministry of Power)

अजय माथुर, पीएच.डी.
महानिदेशक

Ajay Mathur, Ph.D.
Director General

Foreword- Energy Efficiency Report

As COP21 in Paris draws near, India has presented ambitious targets to the world in its recently-released INDC (Intended Nationally Determined Contribution), committing to cut its emission intensity of GDP by 33-35% by 2030 from 2005 levels and increasing the share of non-fossil fuel energy in its electricity mix to 40%.

Businesses globally are becoming ever-more active in doing their part to combat climate change. Their activities are crucial to help government fulfil their commitments. I'm happy to note that Indian businesses are leading from the front and adopting a strategic approach, along with introduction of internal processes, to reduce their energy intensity. These actions would improve their bottom line and reduce dependence on fossil fuel. The efforts of the 20 companies listed in this reports are exemplary. We especially note that while the government programme (Perform, Achieve and Trade, or PAT) introducing mandatory energy efficiency enhancement targets for energy-intensive industries has received a very favourable response from the Indian industry, the industry has gone well beyond the regulatory requirements and has incorporated energy efficiency in its core business strategy as a means to cut costs and increase resilience.

CDP has done a commendable job of collecting energy and climate change related data from thousands of companies globally, including most of the leading organisations in India. The CDP database could serve as an important source for benchmarking and best practice sharing.

I congratulate all the companies represented in this report for their commendable effort in improving their energy efficiency, which is not only good for their balance sheets but makes their businesses future proof.

Let us continue to work together make a cleaner and brighter future.

(Ajay Mathur)

स्वहित एवं राष्ट्रहित में ऊर्जा बचाएँ Save Energy for Benefit of Self and Nation

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India is at an important inflexion in its journey towards sustainable and inclusive development that ensures a resource efficient future along with environmentally benign business growth. Unlike most developed economies, India faces the formidable challenge of achieving economic development while fulfilling significant commitments toward climate action. This dilemma has been effectively articulated in India's Intended Nationally Determined Contribution (INDC); which was unveiled to the world in early October forming an interesting backdrop for the much awaited COP21 in Paris which will provide a unique platform for the heads of nations to arrive at a global agreement for climate change action. As a responsible emerging economy, India is committed to its role in ensuring resource efficient business environment. India announced an ambitious climate-change policy ahead of a major UN summit in Paris earlier this year. India will cut intensity of carbon emissions by 33-35 % by 2030 from 2005 levels; switch to using 40% non-fossil fuel in energy mix also by 2030; and make its economy significantly more efficient.

Given this overall macro-context, energy efficiency is expected to play a critical role in driving towards a resource efficient business environment. In fact, under Prime Minister Modi's leadership, India is already taking rapid strides towards paving the path for energy security in the future. The INDC lists policies to promote actions that address climate concerns and also include fiscal instruments like coal cess, cuts in subsidies, increase in taxes on petrol and diesel, market mechanisms including Perform Achieve and Trade (PAT), Renewable Energy Certificates (REC) and a regulatory regime of Renewable Purchase Obligation (RPO). The institutional arrangement for offtake of renewable power will be further strengthened with the Government announcing plans to quadruple its renewable energy capacity to 175 GW by 2022¹. Additionally, it has also set an ambitious goal of bridging the energy supply and demand gap by 2022.

Company responses to CDP in 2015 demonstrate that energy efficiency has increasingly been deployed by companies as a means of reducing emissions and thus their impact on climate. Higher energy productivity (more production per unit of energy), will also ensure a better balance sheet and act as hedge against wildly fluctuating energy prices and availability.

CDP's climate change program data for the year 2015 shows that of all the emission reduction activities reported by Indian companies, over 70% are energy efficiency activities and out of the total 2 million metric tons of carbon dioxide equivalent emission reduction

"...The Indian flag has four colors—saffron, white, green and blue and I want to bring four revolutions to the country. Saffron is a color of energy, and we must have an energy revolution in India. Our country used to always speak of megawatts but today we are talking about gigawatts..."

Narendra Modi
Indian Prime Minister

achieved, about 1.5 million tons of reduction result from energy efficiency activities. Similar trends were seen in CDP's India 200 Climate Change Reports in 2013 and 2014.

The Government of India has shown considerable foresight in deploying energy efficiency as one of the primary weapons in combatting climate change. Industry must rise to challenge and support this endeavor whole heartedly.

In the following sections we highlight the stellar role of Indian corporations that have gone beyond the regulatory requirements and shown exceptional foresight by increasing their energy productivity through a series of innovative measures that have placed them on par with the best in the world. These companies were selected using a methodology which evaluated their emission reduction activities over

CDP was acknowledged in India's INDC released on 2 Oct 2015 as an organization that helps companies address and manage climate change issues.

the last three years, giving higher weighting to direct energy efficiency activities. The methodology also gives significant weighting to investments made and resulting monetary savings from these activities.

The following section provides an overview of various initiatives and schemes undertaken by the Government of India to drive energy efficiency.

¹ <http://www.ndtv.com/india-news/pm-narendra-modi-addresses-indian-diaspora-in-toronto-highlights-755326>

Context

Initiatives to drive energy efficiency in India

The Government of India has adopted a two pronged approach to meet the increasing energy demand of the population while ensuring minimum growth in greenhouse gas emissions to control climate change:

- ▶ On the demand side, efforts are being made to reduce energy demand through various innovative policy measures; and
- ▶ On the supply side, the government is promoting use of renewable energy and shifting towards efficient technologies for coal based plants.

Demand side energy efficiency policies

The Government has introduced a number of noteworthy policies and schemes to drive energy

efficiency. For instance, the National Mission on Enhanced Energy Efficiency (NMEEE) is one of the missions that aims to strengthen the market for energy efficiency in India by creating a conducive regulatory and policy regime and fostering innovative and sustainable business models in the energy efficiency sector. Last year, a total outlay of ₹ 75 crore (US\$125 million) was approved by the Government for NMEEE efforts. Under NMEEE, four key initiatives were launched to enhance energy efficiency in energy intensive industries. These include:

- ▶ Perform Achieve and Trade Scheme (PAT);
- ▶ Market Transformation for Energy Efficiency (MTEE);
- ▶ Energy Efficiency Financing Platform (EEFP); and
- ▶ Framework for Energy Efficient Economic Development (FEED).

Table 1: Overview of key energy efficiency initiatives in India - Demand side

Scheme	Brief Overview
Perform Achieve and Trade Scheme (PAT)	An innovative market based mechanism to enhance energy efficiency of energy intensive industries through trading of energy saving certificates (ESCerts). All identified industrial units are mandated to reduce their Specific Energy Consumption. The reduction targets are based on their current energy efficiency (average plant reduction target is ~4.8%) Industrial units that are able to achieve their targets can receive energy savings certificates, which can be traded on the power exchanges and bought by non-compliant units to meet their compliance requirements. Industrial units that are unable to meet the targets (through their own actions or through the purchase of ESCerts) are liable to financial penalty.
Market Transformation for Energy Efficiency (MTEE)	Aims at accelerating the shift to energy efficient appliances through measures to make the products more affordable. Two key programs: ▶ Bachat Bachat Lamp Yojna (BLY) for energy efficient lighting. Over 29 million incandescent bulbs have been replaced by Compact fluorescent lamps (CFLs) under this scheme. In the next phase, the Bureau of Energy Efficiency (BEE) will promote the use of LED lights using the institutional structure of BLY Program ² ; and ▶ Bachat Super Efficient Equipment Program (SEEP)
Energy Efficiency Financing Platform (EEFP)	Ensures availability of finance at reasonable rates for energy efficiency project implementation. The scheme also involves creating demand for energy efficient products and services through the preparation of bankable projects and markets. Additionally, the scheme aims to build credible monitoring and verification protocols to capture energy savings; and building capacity of banks and FIs (Financial Institutions).
Framework for Energy Efficient Economic Development (FEED)	Involves development of fiscal instruments to promote energy efficiency. For instance, the following funds have been created: ▶ Partial Risk Guarantee Fund for Energy Efficiency (PRGFEE): a risk sharing mechanism for partial risk coverage for banks extending loans for energy efficiency projects; and ▶ Venture Capital Fund for Energy Efficiency (VCEE): provides equity capital for energy efficiency projects (limited to government buildings and municipalities).

2 <http://powermin.nic.in/Energy-Efficiency>

Note: 1 lakh= 100,000; 1 crore= 10,000,000; \$ refers to USD, ₹ refers to INR

Supply side energy efficiency measures

On the energy supply side, the Government is aggressively promoting greater use of renewable energy and a shift towards supercritical technologies for coal based plants. For instance, the Government

clear indications that industry leaders are beginning to get more and more comfortable with making strategic capital investments as opposed to incremental process tweaks. For instance, there are a few organizations that have successfully undertaken initiatives related to energy efficient green buildings and investments in clean energy sources. At the same time there is a growing number of organizations

Table 2: Overview of key energy efficiency initiatives in India - Supply side

Scheme	Brief Overview
Renewable Purchase Obligations (RPO)	<p>Under this program, electricity distribution companies are mandated to procure a certain percentage of their energy from renewable energy sources. To meet this target, the obligated entity can either purchase renewable energy or it can purchase equivalent Renewable Energy Certificates (RECs).</p> <p>RECs are a market based instrument to help address the mismatch between availability of renewable energy resources in the state and the requirement of distribution companies to meet their obligations. Under a proposed policy amendment, distribution companies in India could be obliged to purchase 8% of solar power by March 2019, up from the original target of 3% by 2022³.</p>

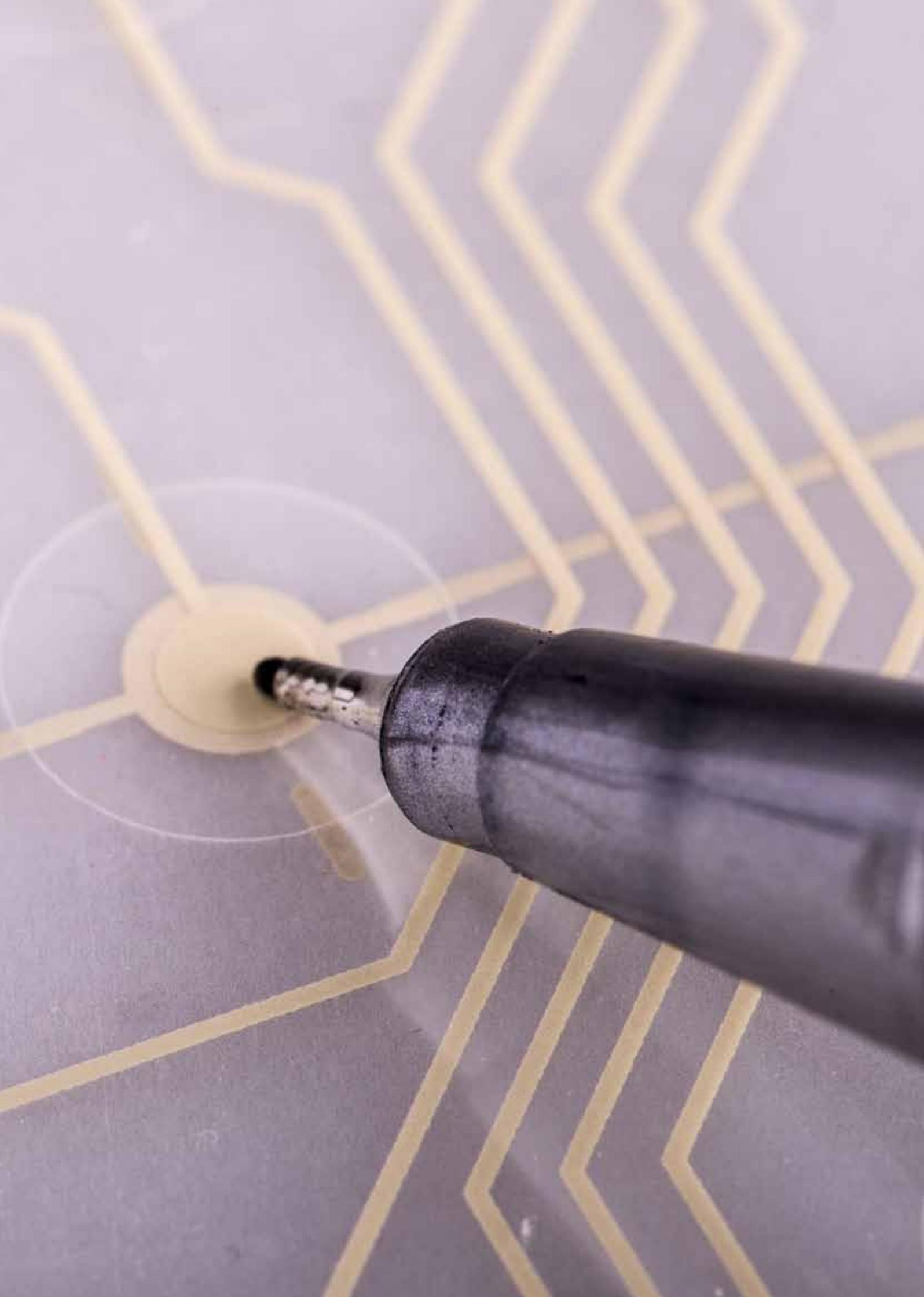
has introduced Renewable Purchase Obligations (RPO) as a policy measure to promote use of clean energy.

While the Government is introducing several innovative policy measures to drive energy efficiency, there is a clear recognition that this is a shared journey to be undertaken by multiple stakeholders. Our analysis of data received from Indian companies who responded to CDP's climate change program in 2015 indicates that corporates too are demonstrating increased awareness and commitment towards undertaking energy efficient measures. There are

that are embracing traditional initiatives related to improvements in energy intensity, and process optimization etc.

The following section describes these initiatives in greater detail along with some noteworthy case studies in the Indian market. These case studies are based on data reported for CDP Climate Change program 2013, 2014 and 2015, as well as on data collected through a separate survey of the selected 20 companies.

³ http://powermin.nic.in/upload/Amendments_proposed_in_the_Tariff_Policy.pdf



Key themes and discussion

Legend for Icons



Energy efficiency process



Energy efficiency building services & fabric



Low carbon energy installation



Low carbon energy purchase



Transportation mode reduction



The changing Indian regulatory landscape coupled with rising energy prices and uncertainties in availability of fuel is driving Indian industrial organizations to adopt a continuous improvement approach and strive to

implement energy efficient practices across their value chain. There are number of clear trends and themes that are pushing the energy efficiency agenda:

Table 3: Key themes emerging from analysis of the energy efficiency case studies

Key Theme	Brief Overview
Theme 1 Operational Efficiency	Maturing of operational process and energy efficiency practices driven largely by PAT targets in most energy intensive industries. A number of interventions around chiller optimization, flue gas recovery, waste heat recovery, pre-heating of fuel and installation of variable frequency drives on pumping systems have been employed by the chemicals, cement, iron & steel and oil & gas sectors.
Theme 2 Smart and Green Buildings	Integrated end to end smart and green building development primarily in the services, retail and financial services sectors where there are large decentralized operations. Initiatives include interventions in both building fabric and materials (efficient building design, use of efficient building envelope materials, use of chilled beam system) and building services (motion based lighting, radiant cooling, smart automation, and high-efficiency chiller plants).
Theme 3 Energy Efficient Products	Rise of product stewardship for energy efficient products and services especially in the construction and infrastructure sectors. Companies are looking at promoting a broad spectrum of services and products including but not limited to low energy consuming and carbon intensive rapid mass transit systems such as mono rail, metro rails, micro hydel power generation, efficient power control, transmission & distribution system, and energy efficient electrical & automation solutions.
Theme 4 End to End Energy Strategy	Companies are looking at developing an end to end energy strategy which involves combining carbon emission reduction and energy efficiency initiatives. These initiatives are tracked and delivered at both the operational and strategic levels. Companies are looking to extend the benefits of energy efficiency and energy conservation to their respective customers and suppliers across the value chain.

Theme 1 - Operational Efficiency: Maturing of operational process and energy efficiency practices in resource based industries

Resource based industries have traditionally been the biggest proponents of energy efficiency initiatives in India in the last few decades. A major driver of this trend has been the need to improve operational and process efficiency of Indian plants and manufacturing capabilities to leverage lower operating costs and enhanced production advantages. Companies in the chemicals, cement, iron & steel and oil & gas sectors have been investing substantially in driving process and operational improvements.

The focus of these initiatives has been to manage and control energy intensity (amount of energy consumed per unit of production) or Specific Energy

Consumption (SEC) which is central to the success of the PAT scheme. According to government calculations, the first three-year cycle of PAT (2013-15) is expected to have led to reductions of 23 million metric tons CO₂e and 6.6 million tons of oil equivalent⁴. This means it has saved about US\$5 billion in oil imports, based on average Brent crude prices during that time, and also eliminated the need for electricity roughly equivalent to the output of five coal-fired power plants. According to Dr. Ajay Mathur, head of India's Bureau of Energy Efficiency, more than 90% of the companies covered in the scheme are on track to meet their targets after investing in new equipment and technologies.

⁴ Upadhyaya, 2010. Is Emission Trading a Possible Option for India? Climate Policy. Vol. 5, Issue 10

ACC Limited - Achieved significant energy saving certificates under PAT scheme



Energy Efficiency is the First Fuel in ACC for its sustainability journey

– **K N Rao**

Director (Energy & Environment)



Key Interventions

Under the PAT scheme, ACC plants have been given an energy intensity reduction target of around 4.8% from the baseline (average of energy consumption during 2007-2010) to be achieved by 2014-15. ACC has made numerous process and product innovations to reduce energy and CO₂ intensity in the cement manufacturing process for many decades. Recent notable initiatives include continual improvement of heat rate of kiln through improvement in burner, pre-heater etc., waste heat based power generation from flue gases, use of waste from other industries such as raw material or as fuel. Waste material utilization has increased almost three and half times in the last two years.

The other initiatives which made significant contribution in reduction of energy intensity are performance improvement of Kiln & coolers through a Computational fluid dynamics study, Variable Frequency Drives for process fans &

ACC's carbon emission reductions are mostly result of their energy efficiency initiatives.

pumps, and the replacement of process fans with energy efficient fans.

Key Achievements

ACC not only met the PAT target, but surpassed it by a considerable margin. As per a recently concluded third party verification process, the overall achievement of reduction is more than 10.5% against a target of 4.8%. The efforts have resulted in achieving a specific metric tons CO₂e emission of 526 Kg/Ton of Cement which is the best performance in the country.

Results of emission reduction activities implemented over three years 2012-15

Financial savings:

₹ 174.9 Crores (\$28.2 million) ▲

ACC

GHG emission reduction:

535,428 tons CO₂e ▼

The PAT scheme has been instrumental in pushing resource intensive industries to take a razor sharp approach on reducing wastes, closing process streams and loops, improving heat and steam recovery and strengthening cleaner on-site generation capabilities.



Indian Oil Corporation Ltd - Improving operational and product efficiency and working towards sustainability



The realities of the current times demand prudent deployment of key public resources, including oil & gas. While smooth and uninterrupted supply of petroleum products is crucial to turn the wheels of progress of nations, creating a benevolent social impact and minimizing the adverse impact of energy use on ecology is equally important.

– **B. Ashok**
Chairman



Key Interventions

As refineries contribute to nearly 90% of India Oil Corporation Ltd's footprint, multiple efforts are being undertaken by the company to reduce the refineries' carbon footprint. The company has undertaken a global benchmarking study to identify best practices on improving operational efficiency to be amongst the most efficient refineries in the world.

Energy Conservation (ENCON) is one of their major initiatives within the refineries division. ENCON measures include replacement of high energy low efficiency equipment with energy efficient alternatives. Pre-heating of fuels has been introduced across refineries to significantly reduce the energy needed in boilers.

Indian Oil's carbon emission reductions are mostly result of their energy efficiency initiatives.

Key Achievements

ENCON projects worth nearly INR 3,000 Cr have been implemented over the past decade. These projects have resulted in fuel savings to the tune of 50,000-100,000 metric tons CO₂e every year. In the past 3 years alone, projects under the ENCON scheme of Indian Oil Corporation Ltd have resulted in emission savings to the tune of 50,000 metric tons CO₂e.

Results of emission reduction activities implemented over three years 2012-15

Financial savings:

₹ 870.0 Crores (\$140.3 million) ▲

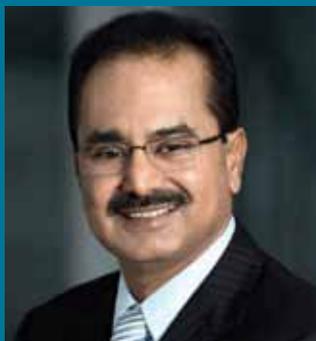


GHG emission reduction:

575,119 tons CO₂e ▼

Many Indian companies are looking to further solidify the gains from energy efficiency by incorporating the concept of energy efficiency as a part of performance management systems and review of their operational performance.

Dr. Reddy's Laboratories- Adopting energy savings initiatives to improve energy efficiency and reducing carbon footprint



In the context of our belief 'Good health can't wait', the need to reduce our carbon footprint assumes greater urgency. The potentially enormous health benefits of cleaner air, not to mention the undoubted savings in energy costs, makes energy efficiency a strategic imperative.

- G V Prasad
Co-Chairman & CEO



Key Interventions

The company has implemented energy conservation projects across its formulations manufacturing plants in India that have resulted in energy savings of 5% year-on-year. In addition, the company has included conservation of energy as a part of employee KPIs (Key Performance Indicators).

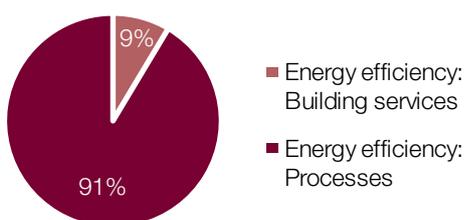
In the formulations division, 60-70% of the energy consumption is to maintain environmental conditions in manufacturing areas in compliance with international regulations. Hence, highly energy efficient centrifugal chillers have been installed, conventional electrical strip heaters in the AHUs

(Air Handling Units) have been replaced with hot water coils for maintaining humidity, and electronic commuter blowers have been installed to pump filtered and conditioned air from the HVAC (Heating, Ventilation and Air Conditioning) system.

Key Achievements

In addition to achieving 5% Year on year energy saving, the company has also widely substituting conventional energy with renewable energy across business units. As of today company uses 20% of its total energy from renewable energy (Biomass & Solar energy) and has aggressive plans in multiplying the usage of renewable energy.

Share of emission reduction by activities (percentage of total, 2012-15)

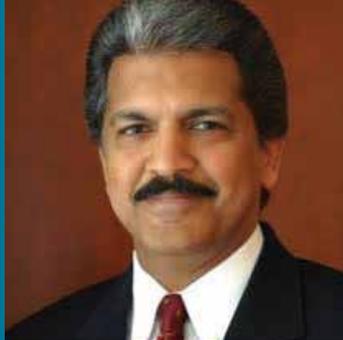


Results of emission reduction activities implemented over three years 2012-15

Dr.Reddy's	
Financial savings:	▲
₹ 12.1 Crores (\$1.9 million)	
GHG emission reduction:	▼
337,464 tons CO₂e	



Mahindra & Mahindra - Closing the loop and optimization of operations



Rising carbon emissions are the dark side of development, they are a challenge for all developing economies and while develop we must, we all need to remind ourselves that development is meaningless if it does not lend itself to a healthy happy and equitable society

- Anand Mahindra
Chairman, Mahindra and Mahindra Group



Key Interventions

To stay commercially competitive and environmentally sustainable, Mahindra & Mahindra maintains unwavering focus on energy consumption and constantly invests resources to increase energy efficiency of its processes.

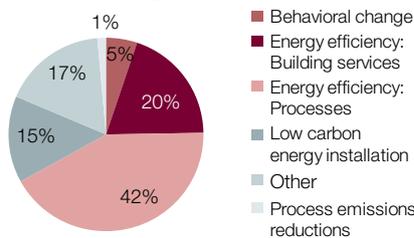
The company has achieved significant emission reduction by heat recovery programs, optimization of hydraulics pump operations, gas exhaust bypass system, variable frequency drives for

cooling fans and numerous other projects. In addition, the company strives to use energy efficiently in day-to-day organizational functions.

Key Achievements

In the Financial Year 2014-2015, the company implemented 318 projects resulting in savings of more than 14,000 metric tons of CO₂e and reduction in power consumption by 3 million kWh per annum.

Share of emission reduction by activities (percentage of total, 2012-15)



Results of emission reduction activities implemented over three years 2012-15

Financial savings:
₹ 15.4 Crores (\$2.5 million) ▲

GHG emission reduction:
33,918 tons CO₂e ▼

With the threat of impending carbon regulations post COP21 at the end of 2015, companies are looking to energy efficiency as the primary key to address growing concerns on global warming and an opportunity to enable the transition to a low carbon economy. Continued improvements in energy efficiency not only leads to greater carbon emissions reduction, but also lowers the reliance on expensive imported fuel and energy. Responses to CDP's 2015 climate change program for India indicate that organizations are concerned about this perceived regulatory risk. Almost half of all the reporting organizations anticipate stringent regulatory framework to be enforced within the next three years. Also, more than half of the companies expect the changes in regulatory framework to relate to areas such as fuel and energy taxes, renewable energy, cap-and-trade schemes and carbon taxes.



Essar Oil Limited- The organization is addressing climate change challenge by driving a business case with a focus on energy efficiency and technology



Addressing climate change is paramount to long term business growth and existence, and energy efficiency & technology are keys to address it

– L K Gupta
Chairman, MD & CEO



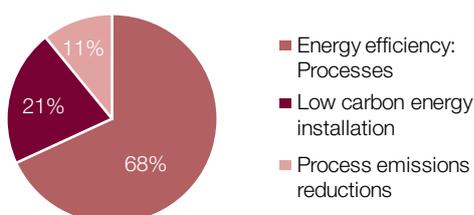
Key Interventions

Realizing that about 80% of the energy is consumed in refining process, Essar Oil Limited (EOL) implemented schemes on multiple process based energy optimizations, on energy efficiency enhancement, waste heat recovery and Technology augmentation. Due to Business competitiveness EOL also had to consider cheaper sources of energy including coal. Process optimisations for energy helped contain the increase in emissions and EOL is therefore, highly committed to enhanced focus on energy efficiency and technology augmentation.

On Upstream CBM exploration, EOL shifted to gas fired generators and compressors to replace Diesel based generators and electricity based compressors.

The company rolled out a unique employee engagement program, “Out-of-Box”, to encourage employees to suggest ideas on energy efficiency. Besides EOL has now embarked on a Pan India program to make its fuel retail outlets operate using Solar PV, replacing emission intensive coal grid / Diesel genset power.

Share of emission reduction by activities (percentage of total, 2012-15)



Key Achievements

The cumulative impact of these on downstream refining was observed in reduction of specific energy consumption of refinery by 34% from 2011 to 2014, in spite of doubling the refining capacity from 10.5 to 20 MMTPA and the Nelson complexity from 6.1 to 11.8 during the same period.

Besides the above, EOL implemented CDM Projects, emission reduction projects with a potential to save 350,000 Metric Tons of CO₂e, major fresh water recycle and reuse initiative to ensure 100% usage of fresh water, Captive plantation of fruit bearing trees (GAP Certified) extending benefits to employee has already sequestered 279,982 MT of CO₂e so far. The Solar PV augmentation at Fuel ROs has the potential to save about 10,000 MTons of CO₂e. These various achievements helped EOL meet its emission targets year on year. Since 2011 EOL led the Energy Sector in CDLI leadership and in 2014, EOL became the only Oil & Gas Company among the 5 Indian companies to have been listed in the CDP A-List.

Results of emission reduction activities implemented over three years 2012-15

Financial savings:
₹ 23.5 Crores (\$3.8 million)



GHG emission reduction:
113,265 tons CO₂e





Ambuja Cements Limited- The organization is focused on converting climate change risks into opportunities to achieve sustainable growth



Climate change mitigation and carbon footprint conscious growth are an integral part of Ambuja's sustainability strategy. The Company is constantly working on efficiency improvement measures by plugging heat losses at every possible stage of coal consumption.

- Ajay Kapur
MD & CEO



Key Interventions

Ambuja Cements Limited (ACL) is seriously looking at cost-effective fuel mixes and increasing the use of alternative fuels and pet coke. As a long term solution to energy security, the Company has invested in Project 'Geo-20', under the banner of 'Geocycle' for harnessing energy from wastes.

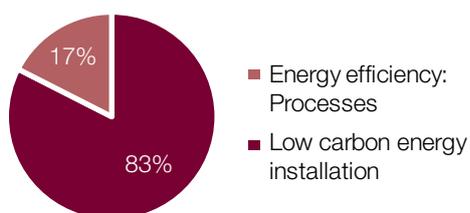
Waste Heat Recovery systems that improve fuel utilization and tapping renewable energy sources are given top priority. New Alternative Fuel and

Raw Material pre-processing platforms have been installed at plant locations to increase the use of alternative fuels.

Key Achievements

ACL's specific Electrical Energy Consumption has reduced from 95-100 kWh/t cement to below 80 kWh/ton cement by better efficiency and technology. The specific Thermal Energy consumption has reduced from 3350-3400 MJ/ton clinker level to below 3100 MJ/ton.

Share of emission reduction by activities (percentage of total, 2012-15)



Results of emission reduction activities implemented over three years 2012-15

Results of emission reduction activities implemented over three years 2012-15		Ambuja Cement
Financial savings:	₹ 161 Crores (\$26 million)	▲
GHG emission reduction:	517,746 tons CO₂e	▼



Arvind - The organization is focused on energy efficiency projects to reduce cost and mitigate supply risk



We have an ongoing commitment to reduce the energy intensity and carbon intensity across all products and we are eager to adopt other innovative ideas and practices implemented elsewhere

– Pragnesh Shah
CEO - Cotton & Agribusiness



Key Interventions

Arvind had launched an extensive energy efficiency drive at its Santej unit which led to implementation of several large and small initiatives. These savings have been achieved through energy efficient air compressors, unity power factor, reduction in specific consumption in humidification plant, boiler efficiency measures and power savings in lighting using LED and magnetic amplifiers. Between the years 2013-15, the plant invested more than ₹ 12 crores (US\$1.9 million) on energy conservation projects.

The plant consumes energy from various sources (own generation, grid electricity, open access etc.) with varied costs of power. For calculating payback, the highest cost is considered to help in justifying the longer payback periods of certain energy savings projects.

Key Achievements

Arvind was awarded the prestigious National Energy Conservation Award 2014, by the Ministry of Power, for optimizing the compressed air system and reducing energy consumption. Installing centralized high capacity HT air compressors reduced the specific power consumption to 0.173

kW per cubic-feet-per-minute (CFM), from 0.221 kW per CFM. The total amount of money invested in implementing in this project was about ₹ 8.50 crores (US\$1.4 million).

Overall Arvind was able to reduce the plant's specific thermal energy consumption by 22% and specific power consumption by 18 %. All these measure have contributed in the total specific electricity consumption which has been reduced from 2.53 KWh/meter of fabric production in the base year 2011-12 to 1.92 KWh/meter in 2014-15, leading to an overall reduction of around 24%.

Arvind's carbon emission reductions are mostly result of their energy efficiency initiatives.

Results of emission reduction activities implemented over three years 2012-15

Financial savings:
₹ 5 Crores (\$0.8 million)

ARVIND



GHG emission reduction:
20,000 tons CO₂e



GAIL- The organization is committed to reduce GHG emission by energy efficiency and adding clean energy



Energy plays a key role not only in driving India’s economic growth but also social progress. This places greater responsibility on GAIL to not only secure adequate and clean energy resources but also to make them available at affordable prices to people and industries. We aim to fulfill national and global commitments and continue to work to support the nation’s growth story and help to bridge the gap between National and International Climate action

– B C Tripathi
Chairman and MD



Key Interventions

Climate change is an integral part of GAIL's Sustainability Aspirations 2020 and they are extensively focusing on increasing energy efficiency and rationalizing energy use. They have made considerable investments in energy efficient technologies. The company has introduced strong and robust energy management system to further identify performance improvements e.g. utilization of generated cold from low temperature RLNG at GREP (Gas rehabilitation and expansion project) compressor station, for cooling of feed gas, replacing natural gas as the fuel source by solar power to run Closed Circuit Vapor turbines (CCVT), etc. leading to saving of electrical and thermal energy. Going ahead, MoP&NG has signed a MoU with MNRE for setting up a SPV for implementing large scale grid-connected renewable power projects for ~ 3000MW solar power & ~ 2000 MW wind power projects through PSU under them. GAIL is one of the stakeholders in the SPV wherein

GAIL's carbon emission reductions are mostly result of their energy efficiency initiatives

we plan to make an investment of over INR 800 Crores.

Key Achievements

Total Investment made in “Cold Utilization” and “CCVT” projects was about ₹ 3.3 Crores (US\$ 0.5 million), which in-turn enabled an annual savings of ₹ 2.2 Crores (US\$ 0.34 million). In terms of energy, this project resulted in savings of approximately 5,686.4MWh per year energy. Other benefits accrued to the organization are improved productivity, reduction of greenhouse gas (GHG) emissions, and reduction of operational costs.

Results of emission reduction activities implemented over three years 2012-15

Financial savings:	
₹ 182.2 Crores (\$29.4 million)	▲
GHG emission reduction:	▼
363,652 tons CO₂e	



JSW Steel Ltd- Investing in low carbon options to triple bottom line benefits



Addressing the material issues for the business in an integrated manner has led the company to adopt climate change mitigation and adaptation strategies that lead to triple bottom line benefits

– **Dr. S Majumdar**
Chief Sustainability Officer, JSW Group



Key Interventions

At JSW Steel, focus on reducing the GHG footprint is a well-established priority. The company has incorporated climate change as a factor while shaping and reviewing its business strategy, and therefore has consistently invested in clean technologies.

JSW Steel was the pioneer in India to invest in the Corex technology at the Vijayanagar Works. As opposed to the conventional blast furnace route, this technology offers several advantages in terms of ability to use low-grade iron ore that was hitherto ignored by the integrated iron and steel manufacturers in India. This utilization of a “wasted” resource not only obviates the need to mine iron ore, it enhances raw material security for the country, avoids energy and emissions associated with the mining, and has resulted in the reduction of about a million metric tons equivalent annually.

Further, the company has developed a power priority hierarchy based on low to high emissions.

JSW's carbon emission reductions are mostly result of their energy efficiency initiatives.

This has resulted in the recovery of nearly 99% of waste energy at the Vijayanagar Works, and over 99% of the power required is produced in-house.

Key Achievements

In April 2015 the Vijayanagar Works, JSW Steel was conferred with the coveted Prime Minister's trophy for excellence in performance as the best integrated steel plant in India for the Financial Year 2012-13. In Financial year 2014-15, Vijayanagar Works invested over ₹ 25 crores (US\$ 3.8 million) on energy conservation projects, resulting in financial savings of over 4 times the investment, with a consequent lowering of the specific energy consumption figure by 0.68 giga-calorie / ton of crude steel .

Results of emission reduction activities implemented over three years 2012-15



Financial savings:
₹ 318.1 Crores (\$51.3 million) ▲

GHG emission reduction:
236,2009 tons CO₂e ▼



Tata Chemicals- Optimizing energy consumption to mitigate climate change impact



As a long-term producer of soda ash, we are committed to integrating sustainability, environmental, social, and ethical principles into business decisions and key work processes

– Paul Peterson
VP Manufacturing



Key Interventions

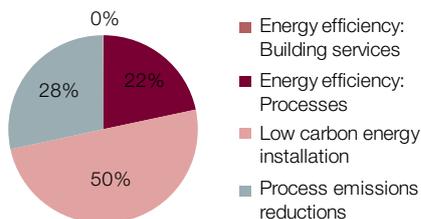
Carbon life cycle has become an important aspect for our downstream customers. Greenhouse gas emissions are an international concern. The production of soda ash from trona creates 0.62 mt of CO₂ per mt of Soda Ash produced. Any future soda ash expansions that depend upon trona conversion using natural gas fall under US EPA Greenhouse gas regulations. Tata Chemicals employed the idea of recovering monohydrate production process wastes to reduce the carbon footprint and reduce production costs using green manufacturing processes. The current processes utilizing trona in mineral form are carbon intensive. Our innovative process does not require the “front-end” equipment of the competitive technology, nor does it generate a carbon footprint (45.2%

reduction in CO₂ generation per mt soda ash produced). It utilizes waste streams instead of consuming trona, and is a technology that requires one third the energy per ton of soda ash.

Key Achievements

This process reduces the operating costs by 15% and increases the variable margin by 11% when 68K mt additional soda ash is produced using this process. Cost avoidance of future evaporative pond construction at \$5 million USD every 5 years, recovery of valuable sodium carbonate decahydrate deposit, and process waste water stream which reduces future reclamation costs, 45.2% reduction in CO₂ generation per mt soda ash produced are immediate environmental benefits of this process.

Share of emission reduction by activities (percentage of total, 2012-15)



Results of emission reduction activities implemented over three years 2012-15

TATA CHEMICALS LIMITED

Financial savings:

₹ 34 Crores (\$5.5 million)



GHG emission reduction:

349,725 tons CO₂e



Vedanta Ltd - Investing in Energy Efficient and Recovery Systems



Vedanta Ltd is committed towards adhering to greener business practices which are not merely energy efficient but further downscale the effects of their operations on the environment and its constituent Natural Resources

– Roma Balwani

President, Sustainability, CSR & Communications



Key Interventions

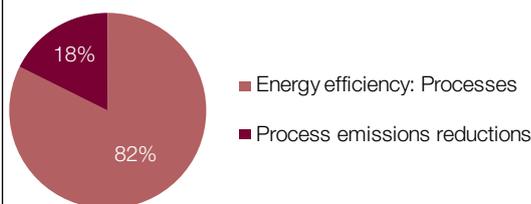
At Vedanta Ltd, constant efforts to generate electricity from waste heat and to become self-reliant for power needs are being taken. The company has installed waste heat recovery boiler of a 139 mega-watt (MW) capacity allowing for greater efficiency in operational energy usage. Sesa Iron business of Vedanta Ltd set up a 30 MW heat recovery power plant to generate low cost, clean energy and add a reliable and sustainable power supply to the business. Subsidiary

businesses are also upgrading existing business management systems to allow accreditation to the energy standard ISO 50001.

Key Achievements

Overall, in 2014-15, the company has saved more than 0.92 million GJ of energy due to conservation and efficiency improvement projects at facilities like Jharsuguda, Hindustan Zinc Limited, Sterlite Copper, Bharat Aluminium Company and other subsidiary businesses.

Share of emission reduction by activities (percentage of total, 2012-15)



Results of emission reduction activities implemented over three years 2012-15

Financial savings:
₹ 201 Crores (\$32.4 million) ▲

GHG emission reduction:
546,187 tons CO₂e ▼



Theme 2 - Smart and Green Buildings: Integrated end-to-end smart and green building development primarily in the services, retail and financial services sectors with large decentralized operations

Buildings are responsible for nearly 40% of final energy use globally, and therefore a major contributor to climate change. The global response to climate mitigation action has been to adopt the green buildings concept.

This provides us with a great opportunity especially in emerging economies like India, where almost two-thirds of the buildings for 2030⁵ are yet to be built. India is among the few countries leading the green building movement worldwide. Green building practices aim to reduce overall environmental and energy impacts of built environments. With a number of programs being launched by the Indian Government and the added benefits of green buildings, organizations are increasingly adopting green building practices.

⁵<http://www.wri.org/blog/2014/03/indias-shift-sustainable-energy-future>

Wipro - Energy Efficiency by Design



Resource efficiency is a strategic area of focus for us from both , the operational aspect as well as from the perspective of wider community stewardship. This is integrated across the way we design, implement and engage with key stakeholders like employees, customers and suppliers.

Mr. Narayan P.S

Vice President and Head – Sustainability, Wipro Ltd.



Key Interventions

Over the last five years, Wipro has implemented a variety of key initiatives targeted to reduce energy consumption, carbon intensity and improve water efficiency in their buildings. Overall more than 100 energy efficiency initiatives have been implemented across locations as a part of the energy efficiency program.

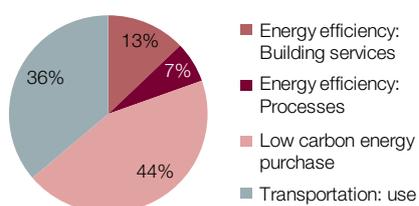
More than 20 of Wipro's current buildings are certified to the LEED standard (Silver, Gold, and Platinum) and 7 are currently in the process of certification. WIPRO Corporate has 4 million square feet. of certified green building workplace along with WIPRO Greater Noida Enterprise Data Center (GNEDC) which is LEED Gold certified.

Some of the key design considerations in building design include optimum building orientation and use of efficient building envelope materials, use of chilled beam system, efficient lighting, optimal distribution of glazing and automation and control. Percentage energy savings in Wipro buildings vary in the range of 13% to 32% when compared to standard buildings.

Key Achievements

Wipro has achieved a compounded energy efficiency improvement of 4.5% over the five year period from 2010-2015, from 3,235 units in 2010-11 to 2,686 units per employee per annum in 2014-15. Cumulatively that has resulted in savings of around 57 million units of electricity (purchased and generated).

Share of emission reduction by activities (percentage of total, 2012-15)



Results of emission reduction activities implemented over three years 2012-15

Financial savings:
₹ 102.3 Crores (\$16.5 million) ▲

GHG emission reduction:
272,365 tons CO₂e ▼



Infosys - Achieving major reductions in energy consumed in its buildings



Sustainability is a business imperative for us and we want to be at the forefront of the movement to plan action against climate change

– **Ramadas Kamath**

Executive Vice President & Head – Infrastructure, Facilities, Administration, Security & Sustainability



Key Interventions

In 2011, Infosys embarked upon a focused approach towards energy efficiency by incorporating/adopting ambitious voluntary goals at the United Nations (UN) for the year 2018 – to reduce per capita energy consumption by 50% against the baseline of 2008, source 100% of the electricity from renewables, and become carbon neutral by FY 2018.

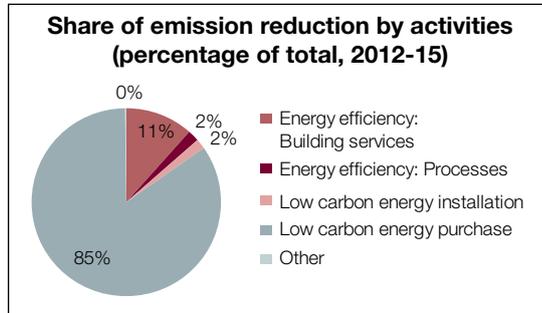
The company started with installing energy meters in all buildings and at sub metering level for all systems like air conditioning, lighting, UPS (Uninterruptible Power Supply) Today, over 5,000 energy meters have been installed. Analysis of energy data helped the company in deploying deep retrofits in all existing facilities, ensure energy performance in operations and gave valuable inputs for new designs.

Several innovative technologies like radiant cooling, smart automation, high-efficiency chiller plants, high performance building envelope, efficient daylighting and lighting strategies, etc.

were deployed across buildings. These initiatives enabled the new buildings of Infosys to set a benchmark in the industry for energy performance, and achieved a significant energy reduction in existing buildings. Another important initiative is third party green power procurement and installation of MW scale onsite solar power plants. **Infosys is also the first Indian company to join the global RE100 campaign earlier in the year.**

Key Achievements

Infosys has reduced its per capita energy consumption by 46% in Financial Year 2014-2015 compared to 2007-2008 and on track to achieve their goal of 50% reduction in the next 3 years. The new buildings of Infosys have an Energy Performance Index of less than 80 kwh/sq. m annually, which is among the lowest in the industry globally. The retrofits and new building initiatives have saved Infosys nearly US\$100 million in the last seven years. The air conditioning retrofits have resulted in a connected load reduction of over 15 MW and UPS retrofits have resulted in a reduction of over 10 MW in connected load.



Results of emission reduction activities implemented over three years 2012-15

Financial savings: **₹ 27.8 Crores (\$4.5 million)** ▲

GHG emission reduction: **129,400 tons CO₂e** ▼

Retail, financial and other business services sectors have widespread and decentralized operations which require significant energy consumption to ensure uninterrupted operations. A significant portion of energy consumption is from electric power provided by electric utilities in the operating areas. These companies are therefore focusing extensively on demand side measures to improve their overall energy performance and efficiency, since the supply side is typically handled by the local electric utilities.

Mindtree Ltd- Deploying efficient demand side energy initiatives across the company



Our priorities are about advancing our shift from resource-intensive processes to resource-conserving processes to usage of renewable energy. Looking forward to unleashing more possibilities for the society, the planet, the individual, and the organization

– **N. S. Parthasarathy**
Executive Director, President & COO



Key Interventions and Achievements

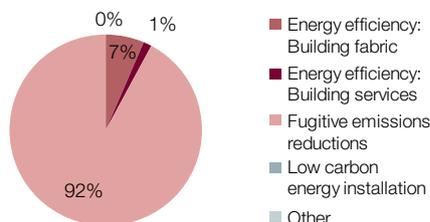
The company has deployed multiple energy efficiency initiatives which have resulted in considerable reduction in energy consumption and GHG emissions:

- **Lighting:** The Company analyzed that 12% of their total power consumption was related to lighting and introduced an energy saver device to the building electrical distribution system which saves almost 15% of their average annual lighting load. The energy saver device installed for lighting panel resulted in power savings of almost 31,200 units/ year and reduced carbon emissions by 16,910 metric tons CO₂e/ year;
- **HVAC (Heating, Ventilating and Air Conditioning):** The Company reviewed its HVAC consumption which comprised of around 60 % to 70 % of total power consumption. They utilized a simple device called “Artic

Master” to optimize system efficiency and reduce energy consumption resulting in 20% reduction in HVAC energy consumption;

- **Data Centers:** The Company addressed the overall energy consumption of its data centers by reducing the tonnage associated with the cooling units. In order to maintain the required cooling temperature of 20 +/- 1 degree Celsius and minimize energy consumption, and Cold Chamber technology, which limits cooling to between the racks only, was employed. This technology has saved the company close 12,480 units of electricity and 6,764 metric tons of CO₂e per year; and
- **UPS and Power Back-up:** The Company decommissioned almost 310KVA in UPS load that was deemed and extra as a part of a through energy review. This saved the company about 16,800 units of electricity and 9,105 metric tons of CO₂e per year. In addition it further reduced the hazardous waste generation by removing 64 UPS batteries from the consumable list.

Share of emission reduction by activities (percentage of total, 2012-15)



Results of emission reduction activities implemented over three years 2012-15

Financial savings:

₹ 0.7 Crores (\$0.1 million) ▲

GHG emission reduction: ▼

489,040 tons CO₂e



Theme 3 - Energy Efficient Products: Rise of energy efficient products and services

With a greater focus on scope 3 and value chain related emissions, companies are now taking a broader view of energy efficiency. No longer is energy efficiency limited to within the typical operational boundaries with companies looking to offer energy efficiency in terms of products and services to help their customers and suppliers.

Larsen and Toubro Ltd- Turning energy efficiency into a product and service line



Sustainable practices ensure optimization of resources. This means conserving resources while lowering costs which is a great proposition. L&T has always been a forward thinking company and sound energy management is one way of increasing value for our stakeholders

- K. Venkataramanan
Former Chief Executive Officer
& Managing Director



Key Interventions

Larsen & Toubro (L&T) has developed the Green Products and Services Portfolio which offers energy efficient, environment friendly, cost effective, state-of-the-art technological solutions to customers based in more than 30 countries. Its Green Products and Services Portfolio consists of construction of Green Buildings, Solar Engineering, Procurement and Construction (EPC), Rapid Mass Transit systems such as Mono Rail, Metro Rails, Small Hydel Power Projects, Waste Water Treatment Plants, Efficient Power transmission & Distribution System, Supercritical Thermal Power Plant Equipment, Efficient Coal gasifiers, Energy Efficient Electrical & Automation solutions.

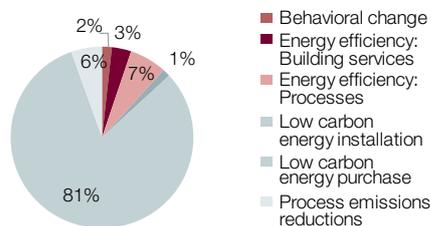
As the company is involved in the construction sector, which has one of the largest potentials for significantly reducing greenhouse gas emissions and reducing energy consumption compared to

other major emitting sectors, it has developed expertise in construction of green building. Larsen & Toubro's Green Products and Services Portfolio has resulted in generating sales of ₹ 23,400 crores (US\$3770 million) in the past three years.

Key Achievements

- In the last year alone, the Green Products and Services Portfolio has contributed 14.31% (₹ 8,183 Crores) to the company's overall sales, an increase of 12% over the previous year.
- L&T has constructed 43 million square feet of green buildings for its customers and additional 11.5 million square feet of green spaces are under various stages of construction. Additionally, the company has also constructed 14 Green Buildings and 1 Green Factory covering a built space of 2.2 million Square feet in its own campuses.

Share of emission reduction by activities (percentage of total, 2012-15)



Results of emission reduction activities implemented over three years 2012-15

Financial savings:
₹ 9.2 Crores (\$1.5 million)



GHG emission reduction:
91,883 tons CO₂e



Theme 4 – End to End Energy Strategy: Integrated carbon and energy management strategy and initiatives across the value chain

While some organizations are focused on adopting specific operational initiatives aimed at driving energy efficiency, there are also a few organizations which are adopting a holistic end-to-end approach. The example of Tata Steel is a case in point - the organization has adopted a holistic energy and climate change strategy which is well integrated and aligned with the organization's environmental strategy.

TATA Steel - Integrated and holistic approach towards energy and climate change management



The challenges of growing cost reduction needs and new regulations on climate change shape our efforts to adopt clean technologies to be competitive in the steel business

– **Shibojyoti Dutta**
Head Climate Change & SSP

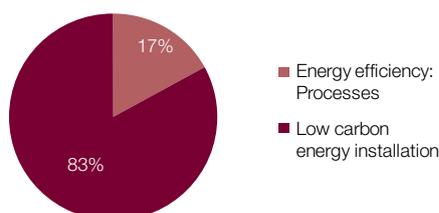


Key Interventions

The company has undertaken a number of operational and strategic initiatives to drive energy efficiency. At an operational level the company's approach for reduction in specific energy consumption has been to enhance energy efficiency of processes through continual improvement, adoption of efficient processes, phasing out less efficient processes, and automation and leveraging value chain enablers. At a strategic level, organization seeks to adopt a holistic approach and has undertaken initiatives including:

- Policy: Climate Change embedded in the Environmental Policy of Tata Steel
- Stakeholder engagement:
 - Internal stakeholder engagement through awareness sessions, training & capacity building and publication of GHG performance through management information system and annual report.
 - External stakeholder engagement through participation in national & international level conference, seminars, awards & assessments, intergovernmental initiatives etc.

Share of emission reduction by activities (percentage of total, 2012-15)



- Specialized and trained personnel: There are 22 personnel trained as Climate Change Champions and 22 more personnel trained as Climate Change Practitioners who help the organization and respective divisions and departments to drive actions on Climate Change.

Key Achievements

- With its ongoing efforts to drive energy efficiency and positive climate impact, Tata Steel has been able to abate 37 million tonnes of CO₂ over the past ten years. The organization has achieved a 22% reduction in specific CO₂ emissions and improvement of specific energy consumption by 14% between Financial Year 2004-05 and Financial Year 2014-15.
- The organization has been recognized for its commitment to climate change:
- Achieved highest disclosure score in Indian materials sector in CDP 2014.
- Recognized on the India Climate Disclosure Leadership Index – three years in succession.
- Recognized by World steel as 'Climate Action Member' – sixth year in succession.

Results of emission reduction activities implemented over three years 2012-15

TATA STEEL

Financial savings:
₹ 412.7 Crores (\$66.6 million) ▲

GHG emission reduction:
1,031,340 tons CO₂e ▼

IndusInd Bank – Setting the trend with pioneering initiatives across the value chain



While carbon footprint management is critical for climate change mitigation, it also guides how efficiently we manage our operations that are energy intensive. I believe carbon emissions reduction will yield better results if examined from operational excellence stand-point

– **Adwait Hebbar**
Head Corporate Services
& Business Responsibility

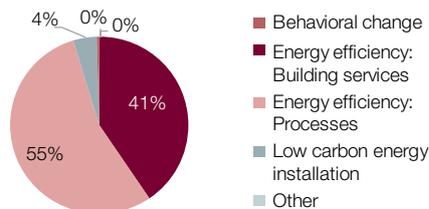


Key Interventions

The company believes 'good ecology is good economics'. Echoing this ethos, the bank has been measuring, managing and mitigating the carbon footprint since 2010. IndusInd bank's strategy is to introduce alternate energy sources and optimize existing energy use pattern. Furthermore, IndusInd endeavor to reduce both the environmental impact and carbon dioxide emissions through various initiatives including:

- Expansion of the Solar Automated Teller Machine (ATM) program: IndusInd has also installed 100 solar ATMs and roof-top solar to address energy security in local areas.
- Switch over to clean fuel vehicles: Corporate and commercial banking group evaluates sustainable and climate investment related projects and has added wind power, solar power and sanitation to its portfolio
- Tele and video conferences to avoid inter-city travel
- Use of recyclable and bio-degradable materials

Share of emission reduction by activities (percentage of total, 2012-15)



- Behavioral changes at office place: IndusInd Bank has focused towards driving energy management initiatives in the workplace and also instituted the exclusive employee engagement program 'Green Champions' who advocate and spear-head this doctrine at grass-root level. Suite of green initiatives at offices such as power saving devices, signage and timers, lighting retrofits

Key Achievements

- IndusInd Bank's per capita emissions have come down significantly by more than 2% between 2012-2013 and 2013-2014
- IndusInd Bank's Tele / Video conferencing initiative is an industry-first innovation and has resulted in over 49,000 Video Banking transactions in its first year of inception.
- Change in consumption behavior based on office place initiatives have helped avoid at least 3,000 metric tons CO₂ annually.
- Energy from Solar ATMs and roof-top helps the bank generate 1.2 MWh annually.

Results of emission reduction activities implemented over three years 2012-15

Financial savings:
₹ 3.9 Crores (\$0.6 million)

IndusInd Bank



GHG emission reduction:
4,071 tons CO₂e



ITC – Integrated Long Term Carbon and Energy Performance



Climate change is undoubtedly one of the most daunting challenges confronting society today... ITC has pursued an extensive low carbon strategy in its operations. This is manifest in our efforts to continuously enhance energy efficiency and conservation as well as invest in cleaner and renewable energy sources

– **Y C Deveshwar**
Chairman



Key Interventions

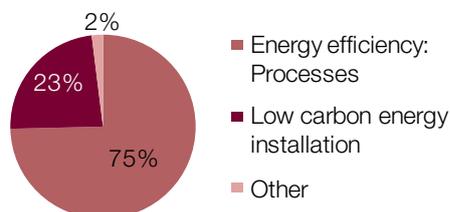
Based on identified climate change risks and opportunities, the important components of ITC's strategy include measures like:

- Investment in renewable energy sources (e.g. wind farms) and increasing the use of alternate energy sources like biomass. These measures require significant investments and decisions are taken based on changing dynamics of impacts on various stakeholders;
- Design of ITC Hotels incorporates the requirements of LEED® Platinum criterion;
- In order to continually improve on energy performance, ITC businesses have set voluntary specific energy reduction targets

Key Achievements

Today, more than 43% of the Company's total energy consumption is from renewable sources. ITC aspires to increase the share of renewable energy to 50% by 2020. Pioneering the movement for 'green buildings', several of the Company's properties are now LEED® certified. All premium luxury hotels of ITC have earned the LEED® Platinum certification making ITC Hotels the "greenest luxury hotel chain" in the world. The ITC Grand Chola is the world's largest LEED® Platinum certified green hotel and enjoys a 5 Star GRIHA (Green Rating for Integrated Habitat Assessment) rating, the highest national rating for green buildings. The ITC Green Centre in Gurgaon is the highest rated green building in the world. As a result of implementation of energy conservation measures, a total saving of 40.3 Million kWh in energy consumption has been achieved in 2014-15.

Share of emission reduction by activities (percentage of total, 2012-15)



Results of emission reduction activities implemented over three years 2012-15

Financial savings:
₹ 7.7 Crores (\$1.2 million)



GHG emission reduction:
52,024 tons CO₂e



State Bank of India – Accelerating Green Banking Initiatives



From recycling programs to energy conservation in offices and branches, SBI is working to reduce its operational footprints on the environment. “Switch off” and “Save Energy Campaign” was designed to motivate employees for energy saving



Key Interventions

For the supply side, State Bank of India (SBI) has invested in Wind mills, Solar ATMs and Rooftop solar power systems for offices and is currently getting a portion of its total electricity requirement from renewables. In addition, there are 149 solar water heating systems installed across 22 cities.

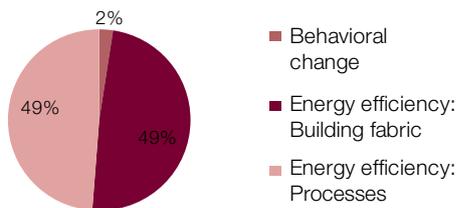
SBI improved resource efficiency of buildings and received a 4 star rating for its office building at Gurgaon from the Bureau of Energy Efficiency (BEE). Three local head office buildings at Ahmedabad Bhubaneshwar and Mumbai have also received 2 star rating from BEE. In addition, SBI is constantly taking actions for retrofitting activities like Installation of Star Rating Air-Conditioners,

switchover to LED Lighting, installation of motion sensor for lights and installation of new energy efficient chillers.

Key Achievements

- Through the “Switch off” and “Save Energy Campaign” initiatives, about 2 million units of energy savings has been achieved from SBI’s local head offices alone, located in nine cities.
- SBI has installed 10 windmills with an aggregate capacity of 15 MW in the states of Tamil Nadu, Maharashtra and Gujarat generating about 33 million units of renewable electricity annually.

Share of emission reduction by activities (percentage of total, 2012-15)



Results of emission reduction activities implemented over three years 2012-15

Financial savings: ₹ 205.2 Crores (\$33.1 million) ▲

GHG emission reduction: 41,000 tons CO₂e ▼



Tata Global Beverages – Effective use of Energy Management System



The Tata Group Climate Change Policy is enumerated by the Chairman and states that Tata companies will play a leadership role in tackling climate change by being knowledgeable, responsive and trustworthy and by adopting environment-friendly technologies, business practices and innovation while pursuing their own growth aspirations and the enhancement of shareholder value. Tata Global Beverages has a four pronged climate change strategy focused on sustainable agriculture for climate change adaptation, sustainable forestry for climate change mitigation, energy efficiency and renewable energy.

– **Ajoy Misra**
CEO and MD



Key Interventions

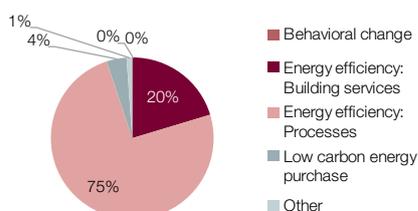
The carbon reduction program at Tata Global Beverages Eaglescliffe factory (TGB) began in 2008 and since then a number of energy saving initiatives have been completed targeting the high energy intensive units first such as compressors and dust extraction. PIR (Passive infrared) sensors were installed on many lights across site and currently there is a project in place for replacing all lights (except those at manufacturing set up) with LED's. Renewable technologies being investigated includes

off-site Solar PV farm and biomass boiler to replace the solid fuel combustion boiler on site

Key Achievements

TGB Eaglescliffe won the Cranfield Judges Award in 2013, and is one of the first companies in the United Kingdom (UK) to be accredited under ISO 50001 standard helping it to get exemption from few of UK's Energy Savings Opportunity Scheme (ESOS) regulations. The site's energy consumption has fallen from 27,708,308 kilo-watt hours (kWh) in 2007-08 to 17,385,004 kWh in 2014-15.

Share of emission reduction by activities (percentage of total, 2012-15)



Results of emission reduction activities implemented over three years 2012-15

TATA GLOBAL BEVERAGES

Financial savings:
₹ 8.0 Crores (\$1.3 million) ▲

GHG emission reduction:
7,433 tons CO₂e ▼



Conclusion

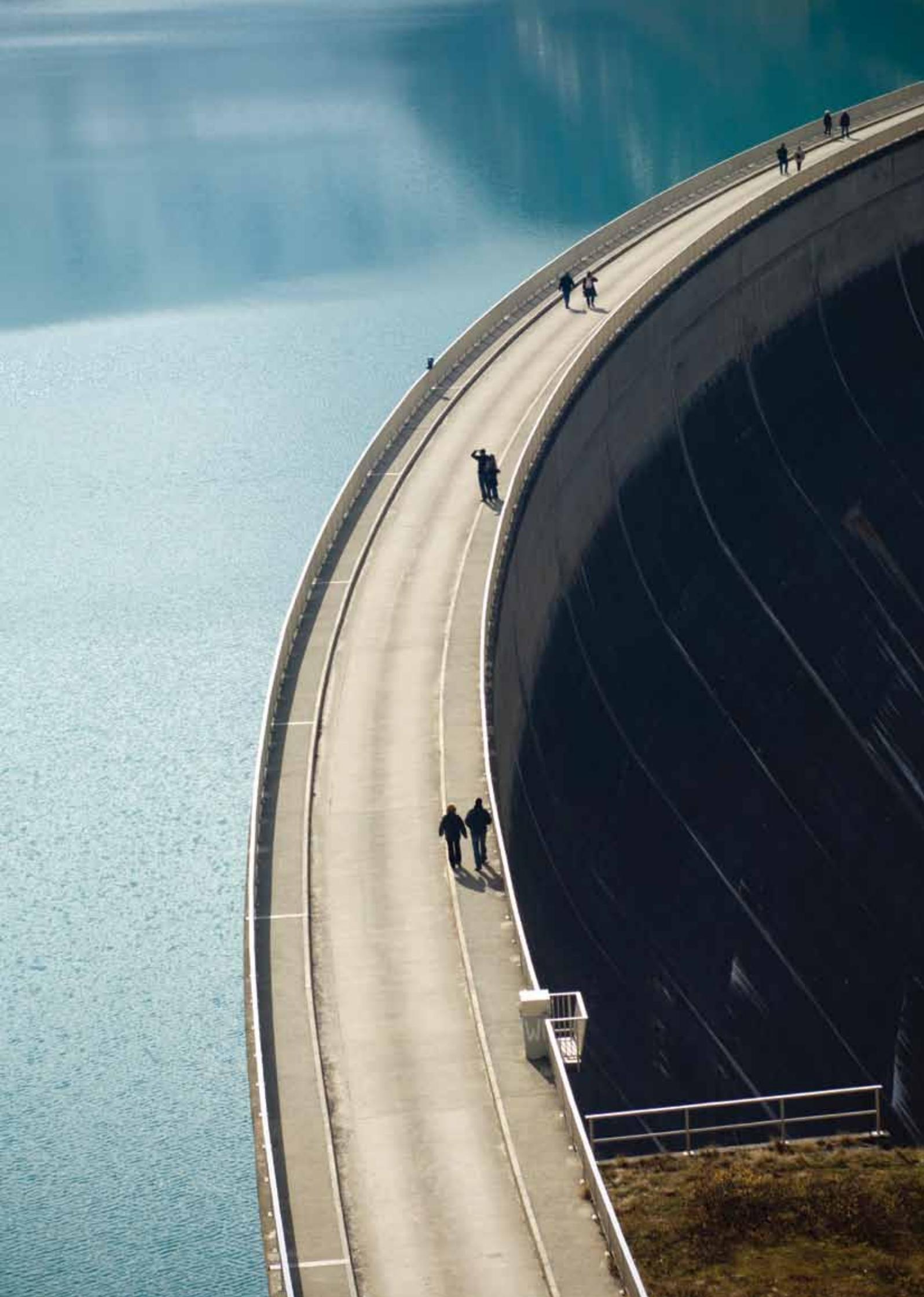
With the Indian INDC having specified a voluntary target of cutting emission intensity of the GDP by 33-35% by 2030 from 2005 levels, it is anticipated that a major portion of this will rest on the initiatives of Indian industry. In this scenario, it is encouraging to note that the biggest Indian companies see the writing on wall and have already embarked on the journey to set ambitious energy and emission reduction targets for themselves which often go beyond the regulatory requirements. While energy efficiency remains one of the most popular means of achieving emissions reduction, companies are not holding back in making huge and long term investments in green buildings and renewable energy infrastructure.

The examples highlighted in this study show impressive measures by corporate giants which would inspire many of their peers and contemporaries, not to speak of their immediate partners and suppliers, to explore the most cost-effective ways of cutting their energy consumption

and carbon emission. These companies have, in many instances, made huge investments keeping in mind energy security for their business and safeguarding them against any anticipated regulations and has contributed to improved brand image.

The government has taken many initiatives to encourage adoption of energy efficiency activities and clean energy purchase and generation. However, there is still scope to do more by making finance easily available and creating a platform for better knowledge sharing between companies. CDP is committed to help in every possible way to improve knowledge sharing and disseminate best practise examples across industries and countries. Through programs like CDP Supply Chain and CDP Action Exchange, CDP has tried to bring together companies, clients and energy efficiency service providers to achieve the best results through wider collaboration.





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