

Fast-tracking Corporate Energy Productivity in India

Doing more with less

White paper | November 2018



Abbreviations

Energy Productivity	EP
Godrej Industries Limited & Associate Companies	GILAC
Internet of Things	IoT
Artificial Intelligence	AI
Intergovernmental Panel on Climate Change	IPCC
Gross Domestic Product	GDP
International Energy Agency	IEA
Smart Energy Management System	EnMS
Large Capital Expenditure	CAPEX
Energy Service Companies	ESCOs
Energy Performance Contract	EPC
Partial Risk Guarantee Fund for Energy Efficiency	PRGFEE
Partial Risk Sharing Fund for Energy Efficiency	PRSFEE
Bureau of Energy Efficiency	BEE
Energy Efficiency Services Limited	EESL
Small Industries Development Bank of India	SIDBI
Internal Carbon Pricing	ICP
Emission Trading Scheme	ETS
Chief Executive Officer	CEO
Cross-Functional Team	CFT
Science Based Targets	SBTs

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Contributors

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- *Abhinav Kumar - Senior Executive Sustainability, Godrej Agrovet*
- *Anirban Ghosh - Chief Sustainability Officer, Mahindra & Mahindra*
- *Shashi Shetty - Manager (Sustainability), UltraTech Cement*
- *Surya Valluri - Jt. Executive President (Technical & Performance Monitoring Cell), UltraTech Cement*
- *Vikas Goswami - Head of Sustainability, Good and Green at GILAC*
- *Vishal Bhavsar - Head of Sustainability, UltraTech Cement*

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And finally, we would like to throw light on the collaborative efforts of The Climate Group's global and India teams, specifically the contributions of Ajitraj Singh, Atul Mudaliar, Jarnail Singh, Jenny Chu, Katrine Tilgaard Petersen and Nithya Devaraj.

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Executive Summary

EP100, a global initiative led by The Climate Group in partnership with the Alliance to Save Energy, offers Indian companies a crucial platform for embarking on a successful net-zero journey which can, in turn, enable India to meet its overarching climate goals.

Defined as getting more economic output from each unit of energy, energy productivity essentially means doing more with less. Using energy productivity to measure environmental performance allows a company to apply a financial lens to its energy use and by doing so, helps to integrate smarter energy use within core business agenda.

The EP100 commitment requires a company to make a public pledge to either:

- i. **Double its energy productivity** within 25 years of the baseline year,
- ii. **Cut out energy waste** by implementing smart energy management systems (EnMS) and choosing a self-determined energy productivity target
- iii. **Owning and operating energy-smart buildings that operate** at net-zero carbon by 2030.

The EP100 reporting requirements ask members to report annual progress on their energy productivity commitment. The Climate Group utilizes this data to build a compelling business case for increasing corporate energy productivity and showcases member leadership at key global moments throughout the year.

Mahindra & Mahindra, an Indian automobile company and the world's largest manufacturer of tractors, became the first Indian company to join EP100 in 2016, with a *baseline year* of 2008-09 and a *target year* of 2030. Dalmia Cement and Mahindra Holidays & Resorts also committed to doubling their energy productivity in 2016. There are now seven EP100 Indian companies who have committed to doubling their energy productivity, with GILAC (Godrej Industries Limited and Associated Companies), UltraTech Cement, Mahindra Heavy Engines Limited and Mahindra Vehicle Manufacturers Limited joining the initiative in September 2018.

This whitepaper contains case studies from EP100 members Godrej Industries (GILAC) and UltraTech Cement, exploring the commitments they have made and the various initiatives that will help them double their energy productivity metrics by 2030 and 2035, respectively. These companies will pursue their EP100 targets by *initiating product innovation, changing their energy mix, improving on energy efficiency, and implementing resource conservation*.

Additionally, the whitepaper looks at various mechanisms through which companies can increase their energy productivity, these include: (1) product as a Service model (2) carbon pricing (3) embedding leadership support and (4) digital technologies, the Internet of Things (IoT) and artificial intelligence (AI).

The business case for corporate action on smart energy use in India is becoming increasingly clear. Currently, India represents EP100's fastest growing region, spanning the cement, heavy manufacturing, hospitality, agribusiness, and consumer goods industries, all committing to doubling their energy productivity between the years 2030 - 2041. However, in order for India to meet its climate goals and to ensure the global transition to a 1.5 °C happens, hundreds, if not thousands of Indian companies now need to step up and take meaningful action on energy productivity.

The urgency of India's clean energy transformation

The United Nations Intergovernmental Panel on Climate Change (IPCC) released a landmark report in October 2018, which warned countries that they have only 12 years left to limit global warming to a maximum of 1.5° Celsius¹. It stated that warming of 1.5° Celsius or more will bring irreversible changes, including the loss of ecosystems, while significantly worsening the risks of droughts, extreme heat and poverty for millions of people. The report also points out that India, in particular, stands to be one of the countries most severely hit by the effects of climate change, and that while India has several successful climate initiatives underway, they currently may not add up to a global 1.5°C transition.

Energy productivity, key to India's green growth

According to the International Energy Agency (IEA), energy efficiency (a key means to improve energy productivity), can support economic growth, reduce emissions and improve energy security. The right efficiency policies could enable the world to achieve more than 40% of the emissions cuts necessary for meeting climate goals with existing technology².

Thus, If India is to make a successful net-zero transformation, the country's private sector will have to step up its 'energy productivity.' Defined as getting more economic output from each unit of energy, energy productivity essentially means doing more with less - primarily by using energy more efficiently. Companies using energy productivity to measure performance apply a financial lens to their energy use, and by doing so elevate smarter energy use across their operations.

$$\text{Energy Productivity} = \frac{\text{Economic Outcome (e.g., GDP)}}{\text{Energy Consumed (e.g., kWh)}}$$

EP100, a global leadership initiative led by The Climate Group in partnership with the Alliance to Save Energy, offers Indian companies a crucial platform to integrate energy productivity measures into their operations. When companies set ambitious targets and place energy efficiency at the heart of their business strategy, they can drive clean tech innovation while delivering on emissions reduction goals. Moreover, committing to increase energy productivity allows a company to reap a multitude of other co-benefits such as job creation, cost-savings and increased energy security.

The bigger picture

Energy productivity gains at the company level also add up to increasing the economic well-being of India in terms of increasing the Gross Domestic Product (GDP) per petajoule used nationwide. The International Energy Agency (IEA) estimates that energy productivity improvements could generate approximately an additional US\$18 trillion in global GDP between 2012 and 2035³. According to a report from ClimateWorks Foundation and Fraunhofer ISI, energy efficiency policies across Brazil, China, Europe, India, Mexico and the US can reduce costs by up to US\$250 billion a year, making energy productivity one of the least-cost decarbonization pathways⁴.

¹ [Intergovernmental Panel on Climate Change \(2018\), Global Warming of 1.5° C](#)

² [International Energy Agency \(2018\), Energy Efficiency 2018: Analysis and outlooks to 2040](#)

³ [International Energy Agency \(2012\), World Energy Outlook 2012](#)

⁴ [Fraunhofer Institute for Systems and Innovation Research ISI \(2015\), How Energy Efficiency Cuts Costs for a 2-Degree Future](#)



Image credit: stock images

What is EP100?

The EP100 initiative brings together a growing group of energy-smart companies committed to using energy more productively in order to lower greenhouse gas emissions and accelerate a clean economy.

The Climate Group estimates that if 100 companies double their energy productivity by 2030, generating twice as much economic output for every unit of energy consumed, over 170 million metric tons of emissions could be avoided cumulatively - equivalent to taking 37 million cars off the road for a year. As of October 2018, EP100 has 35 members from 14 countries, collectively representing over US\$343 billion in revenue.

EP100 criteria

To become a member of EP100, companies choose at least one of three commitment pathways below:

1 Doubling energy productivity

A company doubles the economic output from every unit of energy it consumes globally within 25 years, with a baseline year of 2005 at the earliest.

The company chooses a relevant energy productivity metric and reports on its progress annually. Increasing energy productivity enables a company to grow more sustainably; doubling it demonstrates the highest level of climate leadership.

2 Cutting out energy waste

A company with commercial buildings or industrial manufacturing space implements a smart energy management system (EnMS) globally within 10 years or sooner and commits to a self-selected energy productivity target.

Stopping energy waste is the name of the game, and continual improvements are key. Energy savings are reported annually, and companies that already have an EnMS may join.

3 Owning and operating energy-smart buildings

A company commits to owning, occupying or developing buildings that operate at net zero carbon by 2030, with energy efficiency as a core component. This pathway helps companies to understand what their emissions are at an asset and portfolio level, and to use proven verification means to reach net zero carbon emissions.

This Net Zero Carbon Buildings Commitment is led by the World Green Building Council as part of EP100.

How can Indian companies join EP100?

Choosing an energy productivity metric

Sample metrics for different industry Types	Sample economic output	Sample energy input	Sample EP Metric
Assembly plant (Original Equipment Manufacturer), automotive company	Units of product (number)	MJ	Units of product/MJ
Service based companies with buildings as the main assets	Area (e.g. square meters)	kWh	Square meters/kWh
Services or financial industry	Full time employees (number)	GJ	Full time employees/GJ
Diversified company / conglomerate with multiple revenue streams	Revenue (e.g. \$)	BTU	Revenue/BTU
Hospitality company	Number of room nights booked	GJ	Number of room nights booked/GJ
Cement, steel and other materials manufacturers	Mass of product (e.g. tons)	kWh	Mass of product/kWh

Companies that commit to doubling their energy productivity or cutting out their energy waste may select their EP100 metric based on the following factors:

1. Relevance for the business

For example, Mahindra Holidays & Resorts chose energy used for room nights booked as an energy productivity metric relevant for the hospitality industry.

2. Alignment with existing energy targets

For example, GILAC had an existing target for energy conservation based on the ratio of energy consumption to tons of production. Thus, the company decided to align its EP100 metric with the existing target and chose the ratio of production in tons to energy consumption.

Using these measures as a base, the company sources data available through public disclosures or uses internal reports preferably verified by a third party. Alternately, the company may choose between two or more potential energy productivity metrics depending on availability and quality of historical data.

For example, an automotive company may choose to compile and compare data on the following alternative metrics:

- (A) Number of vehicles / GJ
- (B) Revenue: US\$ Million / GJ
- (C) Weight of vehicles produced: Metric tons / GJ

Choosing your baseline year

The next step is to select a baseline year, to be used as a starting point for measuring overall energy productivity improvements over a set time frame. The company should make the selection based on enabling factors to make an ambitious average annual energy productivity improvement, over a set time frame, that go beyond a business-as-usual scenario.

The baseline year should be representative of a company's normal business operations, as well as consider the average amount of energy consumed by its sector. The baseline year cannot be an anomaly in terms of business operations or be a year in which there is abnormally low energy utilization.

For example, a year in which capacity utilization and energy usage was unusually low, due to plant shut downs or a market downturn, should not be chosen as the baseline. Similarly, the selection of a baseline year must avoid years that witnessed significant acquisitions, economic downturn, any major organizational restructuring and similar such business-impacting events.

The company should also factor in the robustness and relevance of the data it has available. The baseline year for the 'doubling of energy productivity' pathway (*pathway 1*) cannot be prior to 2005.

Choosing your target year

The next step is choosing the year when the company will achieve its energy productivity target. The target year can be chosen based on the expected improvement rates from the company's own projections and/or industry reports and roadmaps. Doubling energy productivity over the span of 25 years requires an annual improvement rate of 2.81%. Some indicative improvement rates for shorter commitment periods are provided in table 4.2.

Table 4.2: Target year rates

Commitment Period (Years)	Improvement Rate (CAGR)
25	2.81%
20	3.53%
15	4.73%
10	7.18%
5	14.87%

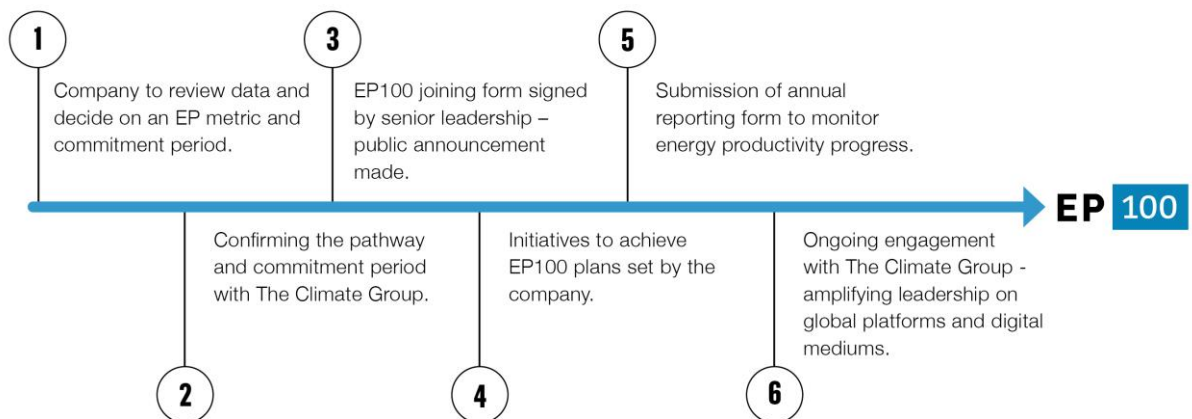
Tracking progress: annual reporting requirement

EP100 members are expected to report to The Climate Group on annual progress against their chosen commitment pathway(s). The reporting only solicits data related to the metric chosen by the member. Besides tracking progress, data is also used to amplify the company's EP100 profile and leadership on energy productivity.

In addition, the data compiled is used to prepare the EP100 annual report that highlights member achievements and progress on energy productivity and energy management goals. The annual report will focus on the aim and impact of EP100, profile individual company leadership and will showcase emerging best practices.

Please note: Data collected through the reporting exercise will be in an aggregated manner and/or will be anonymized, unless EP100 members permit the publishing of individual company data.

EP100 process flow



Anirban Ghosh, CSO, Mahindra Group speaking on the corporate climate leadership panel at The HUB during Climate Week NYC, September 2018.



Member companies of EP100 and RE100 in India explore the critical linkages between energy productivity and renewable energy in TCG workshop, Mumbai, July 2016

EP100 adoption in India

Currently Indian companies account for EP100's largest group of member companies, with seven companies committed to doubling their energy productivity. Mahindra & Mahindra was the first company to join EP100 in April 2016.

April 2016

Mahindra & Mahindra

Consumer discretionary

EP metric: Number of units produced / Energy (GJ)

Target year: 2030

Baseline year: 2008-2009

September 2016

Dalmia Cement

Materials

EP metric: Revenue (INR) / Energy (J)

Target year: 2029 - 30

Baseline year: 2008 - 09

Mahindra Holidays & Resorts

Consumer discretionary

EP metric: No. of room nights booked / Energy (GJ)

Target year: 2030

Baseline year: 2008 - 09

September 2018

Godrej Industries and Associate Companies

Healthcare, Consumer goods, Agribusiness

EP metric: Mass of product (Tons) / Energy (GJ)

Target year: 2030

Baseline year: 2011 - 12

UltraTech Cement

Materials

EP metric: Revenue (INR) / Energy (GJ)

Target year: 2035

Baseline year: 2011 - 12

Mahindra Heavy Engines Limited

Consumer discretionary

EP metric: Equivalent engines/Energy (GJ),

Target year: 2040 - 41

Baseline year: 2015 - 16

Mahindra Vehicles Manufacturers Limited

Consumer discretionary

EP metric: Equivalent vehicles/Energy (GJ)

Target year: 2040 - 41

Baseline year: 2015 - 16



*Image: UltraTech Cement, Vikram
Cement Works Plant, Madhya Pradesh*

Case study: UltraTech Cement

- ▶ Largest cement manufacturer in India
- ▶ Current capacity: 90.8 million tons/annum
- ▶ Part of Aditya Birla Group - a US\$ 50 billion diversified conglomerate
- ▶ Revenue (FY18): US\$ 4 billion+ | Employees: 15,000+

UltraTech Cement is one of the world's leading cement producers, and the largest manufacturer of grey cement, ready mix concrete and white cement in India.



UltraTech Cement joined EP100 in September 2018 and has committed to doubling its energy productivity (revenue/GJ) by 2035, compared to its 2010 baseline.

About 54% of the EP100 target was achieved by FY17 through significant spending on energy saving measures.

The company sees improvement in energy performance as a critical lever for reducing the carbon emission intensity of its operations. UltraTech has invested in energy efficiency measures across its manufacturing plants including cooler upgrades, voltage variable frequency drives and waste heat recovery systems. In the near future, the company will be focussing on modernizing its industrial processes through digitization, internalizing carbon pricing, and will consider adopting new and alternate technologies.



Surya Valluri, Joint Executive President (Technical & Performance Monitoring Cell), UltraTech Cement

How was senior management buy-in garnered for your EP100 commitment?

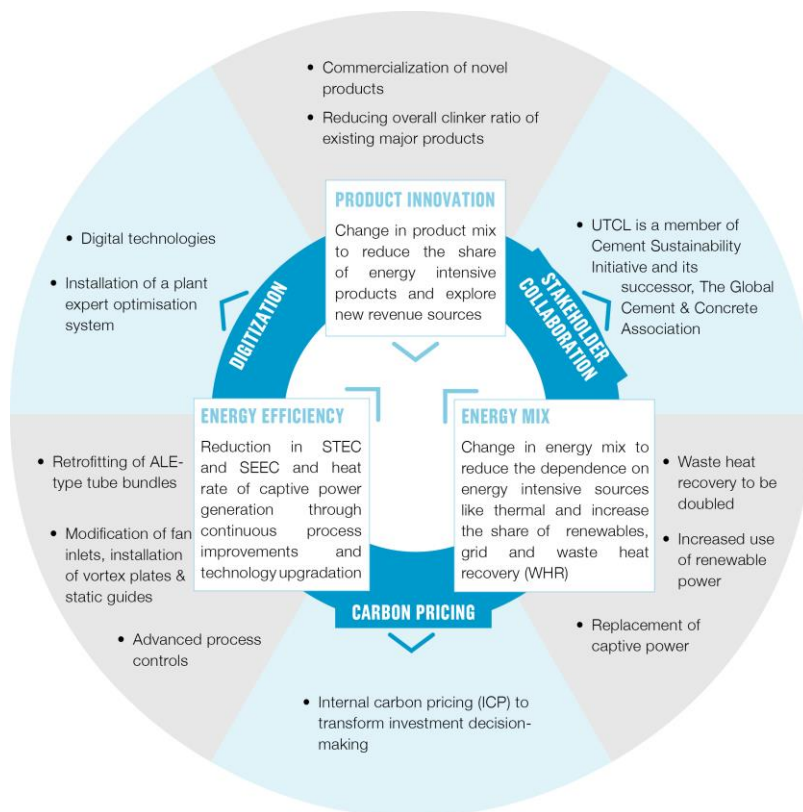
"Even though we are one of the most energy efficient cement plants in the world, our management decided to become a member of EP100 since they believe our doubling commitment will play a catalytic role in lowering our emissions, ensuring energy security, and increasing the long-term competitiveness of the business."

Which teams will be involved in achieving the EP100 target?

"Achieving EP100 will be a joint effort by multi-disciplinary teams. The teams involved from the corporate function will be from energy, innovation, strategy, planning and budgeting, finance, commercial and sustainability. From the manufacturing units it will be teams from Power, Technical and Commercial. Their role will include identifying energy efficiency projects, developing innovative solutions, analyzing the techno-commercial feasibility, implementation of interventions, and project management."

What benefits, other than energy and cost savings, do you anticipate achieving while working towards your EP100 target?

"Joining EP100 will help the company move towards low-carbon transformation and ensure long term energy security. Other benefits include enhanced competitiveness, improvement in our environmental, social and governance (ESG) rating, and a boost to employee morale."



1.06 Kcal/kg clinker: heat saved by installing a plant expert optimization system at Kotputli Cement Works.

1.21 million Kcal: annual thermal savings (equivalent to 265 tons of coal) from replacement of high-drip galvanized tube bundles with aluminium extruded tubes in the air-cooled condenser at Kotputli Cement Works

1.1 million Kwh: annual electricity saved (equivalent to powering 1000 typical Indian households) through modification of fan inlets, installation of vortex plates and static guides, at Gujarat Cement Works.

59 MW: Power generation capacity from waste heat by completing projects with an investment of around US\$ 77 million and a payback of 3-5 years in five UltraTech Plants across the country.

5.5%: increase in energy productivity expected by replacing a quarter of captive power units at a company level for UltraTech.

Cement is one of the most energy intensive sectors in India and globally, with energy accounting for over one-third of emissions. The current level of energy efficiency in the Indian cement industry (including at UltraTech) is already far higher than the global average.

To meet its ambitious goal of doubling energy productivity within a period of 25 years, UltraTech will explore product modifications, changing energy mix for fuel and cost optimization, in addition to the traditional industrial energy efficiency measures.

In addition to direct energy cost savings and greenhouse gas emission reduction, UltraTech's EP100 commitment will also catalyze stronger quality control, higher energy security, enhancement of its ability to differentiate the product as well as mitigate any attendant market regulatory risks.



Waste Heat Recovery Boiler at one of UTCL's plants

"It's hugely encouraging to see UltraTech, one of the leading cement producers globally, step up on energy efficiency – this is a win-win for emissions reduction and business growth. We need to see many more cement companies and other large energy users in hard-to-abate sectors follow Ultratech's lead."

– Helen Clarkson, CEO, The Climate Group

Case Study: Godrej Industries Limited & Associate Companies (GILAC)

Godrej Group is an Indian conglomerate with businesses in a wide variety of industries and whose products reach over 1.1 billion customers globally. GILAC accounts for the most energy intensive businesses of the Godrej Group.

Godrej Industries Limited – GIL (chemicals); Godrej Consumer Products Limited – GCPL (homecare, personal care, hair care); and Godrej Agrovet (animal feed, crop protection, oil palm, dairy and poultry, and processed foods), are the three companies covered under GILAC's EP100 commitment.

Three of four GILAC companies representing the chemicals, consumer goods, and agribusiness sectors committed to doubling energy productivity.

**Combined Revenue: US\$ 1.5 billion+
Total # of Employees: 10,000+**



GILAC joined EP100 in September 2018 and has committed three of its four companies to doubling their energy productivity (revenue/GJ) by 2030 compared to a 2011-12 baseline.

31% of the EP100 target was achieved by FY18 through continuous improvements in energy efficiency and production yield.

The parent company, Godrej Group, has placed sustainability at the core of its manufacturing and product value chain. As a result, the company has delivered year-on-year energy savings and reduced its energy consumption by 41.8% since 2011. The company has also deployed heat pumps, micro turbines and has invested in efficient chemical processes.

In time, GILAC aims to extend its EP100 commitment for all its group companies.



**Vikas Goswami,
Head of
Sustainability, Good
and Green at GILAC**

How was senior management buy-in garnered for the commitment?

"As sustainability is at the heart of Godrej operations, EP100 fit perfectly with our Good and Green goals (Reducing specific energy consumption). The senior management were thrilled by this connect."

Which teams will be involved in achieving the EP100 target?

"At the GILAC level, we have an environmental council called "Greener Council", representing senior management who are the Green champions at the factory level. The Greener India Council supported by Good and Green team will be involved to achieve EP100 targets."

What benefits, other than cost savings or productivity gains, do you foresee from working towards the EP100 target?

"We also have a carbon-neutral goal. We hope that by reducing our energy footprint, it will help reduce our GHG emissions. In addition, we would like to use this as an example to communicate our sustainability Values to external stakeholders."



Energy Efficiency

Electrical savings, better compressed air utilization, waste heat recovery, technology upgradation



Product & Process Innovation

Alternative reaction pathways, higher sale of by-products and yield improvement



Resource Conservation

Lower water consumption, effluent treatment load and less packaging

>1000 MWh: Clean electricity being generated by converting pressure loss into power generation at GCPL, Malanpur & GIL, Valia using micro-turbines installed at GIL, Valia.

60.84 GJ: Annual energy savings from de-acidification used in the production of distilled fatty acid at GIL, Valia.

>50MT: Plastic savings since FY15 through recycling ammonia carboys (containers) by sending more than 21,000 carboys back to supplier for refilling.

3351 GJ: Reduction in thermal energy consumption through installation of energy-efficient vacuum systems at GCPL.

>550 Tons: Oil saved through yield improvement of about 3% by investing in new technology splitting plant at GIL.

~70 tons: Packaging material savings since FY15 by reduction in plastic bag weight and using better materials.

>500,000 kWh: Electricity saved annually from modifications to the chilled water circulation system at GIL, Valia.

>38 tons: Savings in Lauryl alcohol consumption since FY15 through installation of vacuum neutralizer at GIL.

~6%: Reduction in PVC (plastic) wastage during packaging from 15% to 9% at some GCPL sites by using automated packaging.

"GILAC's EP100 commitment fuels economic growth while driving down carbon emissions. As we optimize our energy use, the business case for renewables becomes even more evident. This paves the way for India's long-term transition towards a cleaner and prosperous energy future."

Jarnail Singh, India Director, The Climate Group



Mechanisms for improving energy productivity



Accelerating investments and innovation

Financing energy efficiency projects often poses a challenge for businesses. This is because the payback period or hurdle rate associated with investment grade energy efficiency projects may not meet the company's capital expenditure (CAPEX) criteria. To bypass this financing conundrum, a company looking to improve its energy productivity may consider implementing energy efficiency technologies and products through a Product as a Service model.

Under this scenario, energy efficiency solution providers in effect lease their products to companies, though contracts based on product usage (e.g. monthly recurring right-to-use fee) rather than selling the product outright by charging a one-off fee. For companies wishing to invest in new energy efficiency products, this can be convenient as no upfront capital expenditures are required while the recurring right-to-use fee is predictable from month to month. Users of energy efficiency products under a Product as a Service model can also trade up at a given point in time without having to worry about selling or disposing of the used assets.⁵

"Pay per Lux Model" at Schipol Airport

The Schipol Airport at Amsterdam is an example of a facility that has applied the product as a service model, leading to enhanced energy productivity. In this case, the airport is procuring lighting-as-a-service through a "pay per lux" model. Instead of buying and replacing luminaires, the airport now pays for lighting in the same ways as it would pay for utilities like water or power. By using energy-efficient LED lamps, a 50% reduction in electricity consumption will be achieved over conventional lighting systems. Meanwhile, the "lighting service" provider has the incentive to develop long-lasting and energy efficient lighting since the ownership and operating costs of the lighting installations rest with the service provider instead of with the airport.

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⁵ Renilde Becqué (2015), *Product as a Service – increasing energy & resource productivity*

⁶ Phillips (2015), *Philips provides Light as a Service to Schiphol Airport*

Internal Carbon Pricing

Internal carbon pricing (ICP) motivates a company to minimize energy consumption as less energy consumed equals less carbon produced. It internalizes the cost of greenhouse gas (GHG) emissions of businesses, by assigning a monetary value to each ton of CO₂e emitted and in some cases setting aside a dedicated revenue or investment stream to fund long-term emission reduction measures. ICP facilitates investment decisions related to low-carbon growth initiatives and prepares a business for future regulatory changes relating to Emission Trading Schemes (ETS) or Carbon Taxes (CT).

In 2017, around 1,400 companies—including more than 100 Fortune Global 500 companies with collective annual revenues of about US\$7 trillion—disclosed to CDP that they are using an internal price on carbon to inform their decision-making, or plan to do so in the next two years.⁷ One of the success factors in implementing internal carbon pricing, and for energy productivity in general, is the buy-in of organizational leadership (explained in the next section).

Internal Carbon Pricing at Mahindra & Mahindra (M&M)

The Mahindra Group's Promise Statement 2019 aims to reduce company-wide GHG emissions intensity 25 percent by 2019, compared to 2016. M&M was also the first Indian member of EP100, and it considers carbon pricing a key tool for meeting its climate commitments and reduce climate-related policy and regulatory risk. Mahindra uses an internal carbon price and invests \$10 per ton of carbon emitted into low carbon technologies which help it reduce its carbon footprint. This approach accelerated investments which may not have been approved otherwise. Taking its climate leadership ambitions a step further, M&M announced in September 2018 that it will transition into a carbon neutral company by 2040.

"We are doing our part in the global fight against climate change with this ambitious new target. Mahindra will leverage the latest technological advances and its recently announced carbon price to work towards being carbon neutral by 2040,"

- Anand Mahindra, Mahindra Group Chairman

Embedding leadership support

A recent study published by the Harvard Business Review⁸ surveyed executives from 145 companies with \$1 billion or more in revenue from across sectors and geographies. The companies were categorized as leaders, middle tier, and laggards based on how much their 'energy maturity' drove business value. It was found that an energy strategy is difficult to implement without explicit engagement from the Chief Executive Officer (CEO) and a clear governance structure. Laggard companies in the study identified the lack of this governance structure as their biggest obstacle to progress.

I. Management buy-in

Effectively managing energy consumption requires a commitment by management to educate workers and value chain partners through energy awareness, empathy, best practices, coaching, and action. Company leadership needs to modify employee behaviours to effect a cultural change throughout the company. Such cultural and behavioural changes must start with the CEO and executive management regularly articulating their commitment to energy efficiency and its importance to profitability and the environment.

⁷ [CDP \(2017\), More than eight-fold leap over four years in global companies pricing carbon into business plans](#)

⁸ [Andrew W, George F, et al., Harvard Business Review \(2017\), Energy Strategy for the C-Suite](#)

II. Energy champions

Furthermore, a senior executive should be appointed as energy champion to emphasize the importance of this commitment. The energy champion subsequently can assemble a cross-functional team (CFT) that carries out all relevant functions to develop the firm's energy strategy and guide execution. The team can recommend specific energy and emission targets to the CEO and share an action plan with several broad areas of focus. These would then translate into an internal or public announcement of the company's voluntary targets.

Digital technologies and the Internet of Things

Digital technologies are disrupting the way business is conducted. They are being leveraged by leading businesses to ramp up economic outputs and manage energy inputs more effectively, using connected assets, data driven analytics, automated decision making, predictive maintenance, and other applications. Furthermore, digital technologies can help companies with a high level of operational energy efficiency reach the next level of improvement in their energy productivity.

Implementation of Internet of Things (IoT) in conjunction with data technologies is a good example of multiple co-benefits arising from an initiative that improves energy productivity. For instance, IT company Infosys is remotely monitoring over 20 million square feet of office space spread across 91 buildings from two command centres to deliver thermal comfort, air quality and environmentally efficient operations. Meanwhile, smart building systems coupled with an energy efficient building envelope has allowed Infosys to achieve an Energy Performance Index as low as 75 kWh/ m²/ year for new buildings, which is among the best in the industry.

Widespread digitalization in buildings in India have the potential to save 4.01 PWh of energy according to IEA⁹. This is particularly relevant for leading service sector organizations adopting ambitious energy productivity targets. Digitization can help overcome the limitations of manually managing energy consumption distributed across thousands of assets, whether they are buildings, retail outlets, ATM branches or telecom towers.

Businesses are also venturing into technologies such as Artificial Intelligence (AI), to improve their energy productivity. Many companies are starting to use AI algorithms to process millions of data points collected through smart meters and sensors installed on processes, machines, or buildings and then create a digital twin, which is essentially a digital representation of a physical object. Once a company has mapped out this digital representation, they can then move to the optimization phase, whereby double-digit energy savings can be obtained simply by changing the way companies use what they have already rather than having to purchase new hardware¹⁰. For instance, using DeepMind's machine learning on its data centres, Google has managed to reduce the amount of energy they use for cooling by up to 40 percent.¹¹

⁹ [International Energy Agency \(2017\), *Digitalization and Energy*](#)

¹⁰ [Gianluca Mauro \(2018\), *Energy saving in the digital era: how AI can be a killer resource — EIT InnoEnergy "AI4Energy webinar" blogpost series part 3*](#)

¹¹ [Richard Evans and Jim Gao, DeepMind \(2016\), *AI Reduces Google Data Centre Cooling Bill by 40%*](#)

Call to action

The urgent need for corporate action on smarter energy use is clear, and so is the path to achieving it. This is demonstrated by the growing number of companies in India aiming to improve their energy productivity through EP100.

Currently, India represents EP100's fastest growing region with seven companies spanning across the cement, heavy manufacturing, hospitality, agri-business, and consumer goods industries all committed to doubling their energy productivity.

With a focus on doing more with less, companies such as UltraTech and Godrej Industries stand to reap multiple benefits such as energy and cost savings, lower greenhouse gas emissions, more efficient use of resources, a boost in worker morale and enhanced competitiveness.

However, if India is to deliver on its climate ambitions hundreds, if not thousands, of businesses need to step up and start putting smarter energy use at the top of their business agenda.

To find out more about EP100 and how your company can lead in India's transition to a net-zero economy, please contact Atul Mudaliar at AMudaliar@theclimategroup.org



About EP100

The Climate Group's global EP100 initiative brings together a growing group of energy-smart companies committed to doing more with less. By integrating energy efficiency into business strategy, these leading companies are driving tech innovation and improving competitiveness while delivering on emissions reduction goals – inspiring others to follow their lead.

Saving energy makes business sense; our members are generating green growth and driving substantial cost savings by owning and operating energy-smart buildings, cutting out waste, and doubling their energy productivity – generating twice as much economic output for every unit of energy consumed.

EP100 is led by The Climate Group in partnership with the Alliance to Save Energy as part of the We Mean Business coalition, and is delivered in association with the World Green Building Council's Net Zero Carbon Buildings Commitment. Visit theclimategroup.org/EP100 or follow #EP100 on Twitter.

THE CLIMATE GROUP

About The Climate Group

[The Climate Group's](#) mission is to accelerate climate action to achieve a world of no more than 1.5°C of global warming and greater prosperity for all. We do this by bringing together powerful networks of business and governments that shift global markets and policies.

We focus on the greatest global opportunities for change, take innovation and solutions to scale, and build ambition and pace. We are an international non-profit organization, founded in 2004, with offices in London, New Delhi and New York. Our business campaigns are brought to you as part of the [We Mean Business](#) coalition.

Visit TheClimateGroup.org and follow us on Twitter @ClimateGroup and Facebook @TheClimateGroup.



The Climate Group
TCCO India Projects Pvt Ltd
717-718, International Trade Tower
Nehru Place, New Delhi – 110019
www.TheClimateGroup.org

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