



BREWING A SUSTAINABLE FUTURE

BEST PRACTICES

TATA GLOBAL BEVERAGES

INDEX



Cyrus P. Mistry
Chairman,
Tata Sons



Harish Bhat
Member, Group Executive
Council, Tata Sons &
Director, TGB Ltd.



Ajoy K. Misra
Managing Director & CEO,
TGB Ltd.



Katy Tubb
Director
Tea Buying & Blending,
TGB Ltd.

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Brewing a Sustainable Future

Sustainability has always been an integral part of our businesses. In sync with the nature of their operations, geographical conditions and locally relevant community issues, different business units have successfully implemented different initiatives. Some sustainability practices are so deeply embedded, that they have become a way of life in that particular unit. With a view to create a knowledge bank, on World Environment Day 2013, we invited our units to share best practices that have helped them enhance environment and social sustainability.

The end goal is to create a repository which helps other business units **identify interventions, leverage the learning and replicate the success.**

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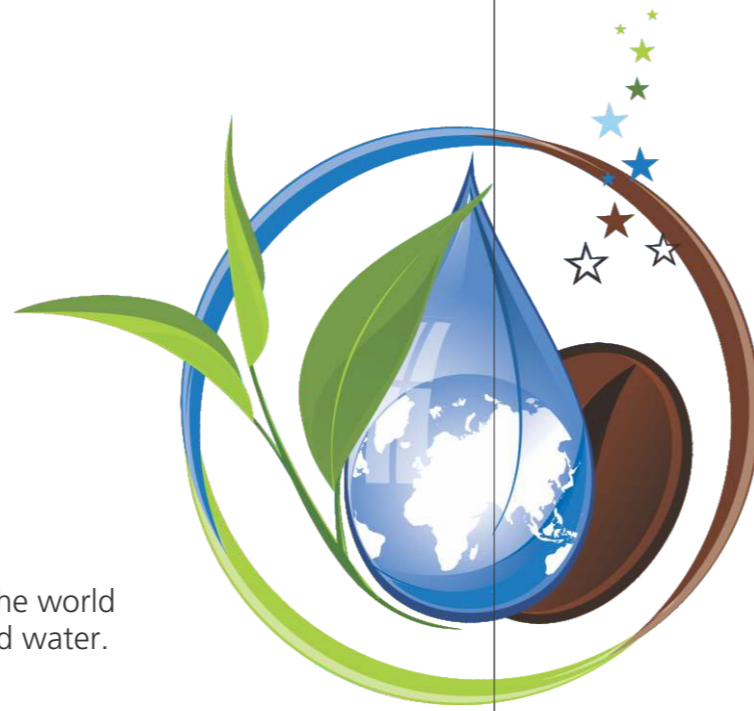
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OUR VISION

to be the most admired natural beverages company in the world by making a big and lasting difference in tea, coffee and water.



OUR PURPOSE

We will focus on creating magical beverage moments for consumers and an eternity of sustainable goodness for our communities.

Let's Create Magical Moments Together.





MESSAGE FROM THE CHAIRMAN, TATA SONS

Dear Colleagues,

From its very inception, the Tata group has been dedicated to doing what is right. To quote our Founder, Jamsetji Tata,

“In a free enterprise, the community is not just another stakeholder in business, but is in fact the very purpose of its existence.”

Even after more than a century since that statement was made, our dedication to the community has continued to shine. We have learned that to care for people, we must also care for the planet on which we all live. In recent years it has become clear that climate change is a reality and that no business group should – or for that matter, can afford to – ignore the consequences of changes in our environment. Our commitment to the environment is unwavering, and we strive to achieve the greater good in all countries in which we have our operations.

We take a long-term approach in our strategy, and as an empowered part of society, we take our roles and responsibilities very seriously while working towards shaping our shared future. Innovation goes hand-in-hand with sustainable action and drives us to tackle global challenges of rising populations, climate change, reduction of biodiversity, and the decline of finite resources. Through these efforts, we should continue to create shareholder and societal value, while reducing our environmental footprint along our value chain. By setting ambitious goals, we must stretch ourselves to significantly improve our environmental and economic performance, further benefitting our value chain.

To my mind, a cohesive and consistent approach to sustainability is required for the Tata Group of companies, adhering to broad principles when defining sustainability while focusing on efforts relevant to each Company.

Preparing for the business model of tomorrow will require companies to balance economic benefit with environmental benefits while thinking beyond their organisational boundaries and incremental improvements. Concurrently, all efforts should be made to blend sustainability into roles throughout the enterprise rather than segregating it in a particular function or department.

Cyrus P. Mistry



MESSAGE FROM MEMBER, GROUP EXECUTIVE COUNCIL, TATA SONS & DIRECTOR, TGB LTD.

Dear Friends,

Our Company's sustainability and community initiatives are inspired by the Founder of the Tata Group, Jamsetji Tata. Over a century ago, and many decades before sustainability became a fashionable word in the corporate world, he said “In a free enterprise, the community is not just another stakeholder in business, but is in fact the very purpose of its existence.” I urge each of us to be true to this spirit.

Even as we drive business growth and profitability, let us be equally aware of the need to contribute to the environment and to society.

I salute many of you, who are doing excellent work in this regard, and I request each of us to make environmental sustainability part of our workplace and our lives. Let us make this world a better place to live in, for our children and grandchildren. That will be the brightest and biggest legacy we can leave them.

Our Chairman, Mr. Cyrus P. Mistry, has said that Tata Global Beverages should aim to be a US \$ 10 billion company by 2022. I would like to add that TGB should also aim to be a sustainability leader in the natural beverages business. What does this mean? It means we will necessarily be water positive, carbon neutral, zero waste to landfill, 100% ethical supply chain, and we will also invest some of our profits in community development.

We have identified five strong pillars of sustainability for the future - climate change, water management, sustainable packaging, ethical supply chain and community work.

In some of these areas, work has already begun. In others, work is yet to begin, and is likely to require significant and concerted effort. But we are determined to succeed, working jointly across the globe.

Harish Bhat



MESSAGE FROM THE MANAGING DIRECTOR & CEO, TGB LTD.



MESSAGE FROM THE DIRECTOR, TEA BUYING & BLENDING, TGB LTD.

Dear Friends,

The Tata Group has defined its commitment to sustainability and the environment - it is in the DNA of the Tata Group. The Tata Group Climate Change Policy is enumerated by the Group Chairman himself.

The Group Chairman says, and I quote "The Tata Companies will play a leadership role in tackling the 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."

When the Chairman urges us to pursue climate-friendly profitable growth, it becomes easier for us to put into place business practices that have longer term beneficial impact on the environment, than to pursue short-term business gains.

In TGB we have managed to reduce the carbon intensity by 22% in the past 2 years while business continues to grow both top-line & bottom-line.

Tata Global Beverages has a four-pronged strategy that includes Sustainable Agriculture & Sustainable Sourcing, be it sourcing tea from Kenya Malawi or parts of Africa, or southern parts of India, or coffee from plantations in South India, we will work with entities like Ethical Tea Partnership, Rain Forest Alliance and a new initiative in India for ethical sourcing called Trustea; Sustainable forestry towards climate change mitigation, and the use of renewable energy sources such as Tata Coffee's use of wind power which helped reduce its energy footprint by 25%, and the largest biogas plant in Sri Lanka in terms of utilising animal wastes to produce gas in the estates.

In TGB, while it is a challenge to get an absolute 100% commitment to climate change and sustainability initiatives, with pressures of investments and costs, it helps to have an overall Group policy that provides senior management support to adopt long and medium-term strategies towards sustainability.

In all humility we must confess that TGB is at the beginning of its journey to being a truly sustainable company. We have pockets of excellence in different parts of the world - the Egelcliffe factory in the UK is zero waste to landfill but we have many other factories that aren't; we have biogas plant in Sri Lanka, but we can do much more in solar and wind. We are just embarking on a journey towards reducing our water footprint. We have a lot more to do in our Company itself.

All these efforts are certainly replicable and make business sense - consumers like and buy products that have been sourced and produced ethically, employees feel proud to be associated with a company that has a focus on sustainability. Therefore, while a lot remains to be done, a focus on sustainability is holistically a good thing to do for all our stakeholders.

Companies that have embarked on this journey must resolve to accelerate, collaborate, co-create, and be unwavering in the quest for minimising the carbon footprint, water footprint, and to pursue sustainable practices despite the current economic macro situation. Our resolve to be a leading proponent of sustainability should be steadfast. It is infectious - so in this case - we must spread the infection!

Ajoy K. Misra

Dear Colleagues,

Tata Global Beverages has had an active agenda on Ethical Sourcing of raw teas for many years.

Our aim is to ensure that we source our teas from producers across the world who meet good social and environmental standards.

We began working with the Ethical Tea Partnership, as one of the founding members in 1997, to help achieve this. We are committed to being 100% Rainforest Alliance certified on all our Tetley branded teas in the EMEA and CAA regions by 2016, and are on track to achieve this with inclusion rates of 50% or more in many blends. We are also founding members of the Trustea initiative in India, a multi-stakeholder initiative led by the Tea Board of India, to sustainably transform the Indian tea industry.

International standards and auditing can identify sustainability issues in our raw tea supply chain, but audits by themselves do not solve industry issues. As we began to understand the various challenges in our supply chain, we found that some of these were quite straightforward to resolve; whilst others were much more difficult and complex. It can sometimes appear too daunting to start! But just because something is difficult to tackle doesn't mean we shouldn't try.

Our ethical sourcing experience has shown us that lots of progress can be made even with the difficult problems. The best way to do this is by talking to, and working with others. We involve other partners who bring different expertise, viewpoints and previous experience of similar issues in different sectors. The secret is to not re-invent the wheel, but to make the best use of our time and resources by tapping into the knowledge and experience that others have already developed. In our case, we work together with other tea packers, producers and trade organisations. We work with other industry sectors (e.g. retailers, other commodities), unions, certifiers (such as Rainforest Alliance, Fairtrade, Trustea and UTZ), governmental agencies and non-governmental organisations to find sustainable solutions.

This booklet has been prepared to share best practices across our business, and sharing best practices is a great way to tap into a knowledge pool that already exists.

I hope you find the best practices presented in this booklet useful. Please read through and if you see a project which is related to a challenge you face, do get in touch with the team and speak with them. Putting our heads together will help us progress faster on our sustainability challenges!

Katy Tubb

Be sure to lay wide streets planted with shady trees, every other of a quick-growing variety. Be sure that there is plenty of space for lawns and gardens.

Excerpt from a letter Jamsetji Tata wrote to son Dorab about his vision for Jamshedpur

More than a hundred years later, this philosophy of enhancing nature and its constituents, still governs us.

Our business is influenced by every element of nature - water that irrigates our gardens, soil that we cultivate, fire that burns in our furnaces, air that takes in our emissions and the lives that we touch through our operations and products. We are committed to make a **positive impact across all these spheres.**

Here we present select initiatives undertaken across different units in the domain of energy conservation, green cover, water, waste and air.



ENERGY

The energy crisis is a result of the ever-widening gap between the exponentially increasing demand and the snail pace growth in supply. The need of the hour is not just to **keep a check on the increase in demand,** but also **rationalise existing consumption and incorporate** viable and economically feasible **renewable sources in the energy mix.**

Thus, we have put into practice, a host of measures aimed towards optimising consumption, encouraging green energy sources and enhancing efficiency of existing machinery and processes.



Transforming the Transformer

Tata Global Beverages Czech Republic a.s, Czech Republic

The Challenge

Tea production is an energy intensive process. It takes 8 kWh of energy to process one kilogram of finished tea, compared to 6.3 kWh for the same amount of processed steel.

TGB Czech Republic's brand Jemca is the market leader in the Czech Republic with 20.6% volume share. This high volume production translates into high power consumption and makes energy management a key focus area.

The Change

The electrical equipment industry has been constantly updating and upgrading itself. The equipment are much more energy-efficient today than they were even a decade back. Investing in these advancements can lead to sizeable savings in energy consumed per unit of produce.

In February 2011, the unit commenced the overhauling of its power supply system and as part of the process **installed a new electric transformer.** Not only did it improve efficiency and reduce costs, **it also enhanced safety as the connection points were upgraded.**

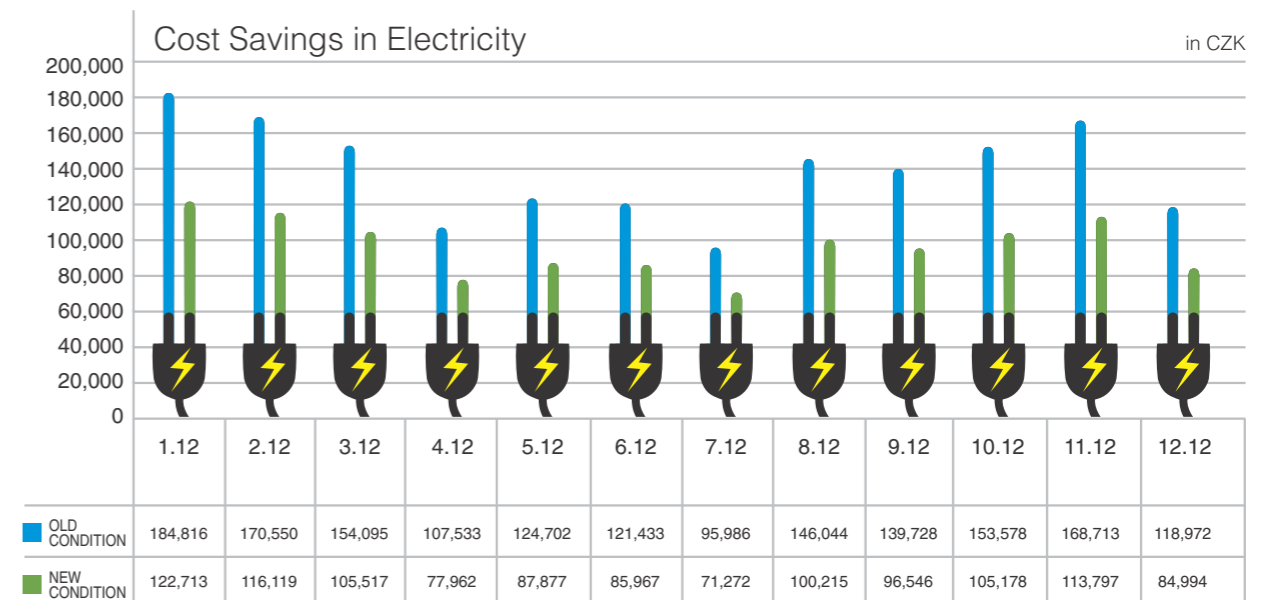
The cost benefits are already evident and break-even is expected within 2-3 years.

The Result

In the calendar year 2012, the unit recorded cumulative savings to the tune of **518,000 CZK** (approx. USD 25,736).

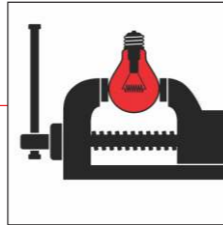
Total units of energy saved: **197,710 kWh**

Calculated at 2.62 CZK / kWh



Divide and Replace to Save

TGB Ltd., Aurangabad Packeting Centre



The Challenge

Often large energy savings can be achieved by adopting simple actions. On close examination of the facility, it was evident that substantial energy losses were due to the common flaws in the electrical system.

The Change

Two key areas of intervention were:

Common Electrical Connections

Inefficient Equipment

There were quite a few instances of multiple electrical appliances being controlled by a common switch. So, when the employees switched on fans during the day, the lights would also turn on. These were promptly segregated and individual switches were provided.

Thereafter, **power-hungry processes and equipment were identified and replaced with energy-efficient substitutes.**

The Result

The unit saved a total of **INR 515,619** by implementing the following initiatives:

Sr. No.	Initiative	Electricity Saved (in kWh/month)	Monthly Cost Savings (in INR)	Annual Savings (in INR)
1	Separation of lighting and fan connections	1,347	8,530	102,381
2	Installation of sensor-based air curtain at dispatch gate	156	987	11,849
3	Conversion of vertical heater in nichrome machines from existing rating of 550 W to 400 W	62	394	4,739
4	Replacement of halogen lights with 14 LED lights	568	3,587	43,054
5	Introduction of 36 powerless turbine air ventilators to control shop floor temperature	4,655	29,466	353,593
Total		6,789	42,968	515,619



Quality Circles that Save Energy

TGB Ltd., Pullivasal Packeting Centre, Munnar



The Challenge

The beauty of tea gardens camouflages the difficult terrain they inhabit. Munnar, situated in Kerala at an altitude of 1,600 meters above sea level, is a case in point. Here, power transmission and distribution is challenging and thus every watt is more valuable.

The Change

Since 2009, the Pullivasal Packeting centre in Munnar, has identified and implemented multiple initiatives to **reduce energy consumption** through its effective Quality Circles (QC) and Kaizen.

Some of the key initiatives and projects implemented are as follows:

- Commenced close monitoring of power consumption on a day-to-day basis at managerial level.
- The multiplication factor to HT metre reading that was earlier 4.4 was calibrated from the Time Of Day (TOD) metre to 4.0, thereby reducing electricity bills by 9%.
- Replaced the 1 HP vacuum pump motor with pneumatic control system in the pet jar packing machine.
- Replaced twelve 2 HP gear motors of the packet discharge conveyors with 0.5 HP oil-free gear motors.
- Installed Variable Frequency Drive (VFD) for optimising compressor load balancing.
- Implemented a QC project to reduce power consumption in dust collection systems.
- Implemented a QC project on effective utilisation of Vacuum Conveyors (VC) which brought down the actual quantity required, from the initially estimated 8 conveyors to just 5 conveyors. It also helped affect a significant reduction in compressor usage.
- Replaced 3 HP motor in the finished goods movement
- conveyor with a roller conveyor, eliminating the need for power.

This Project won a Silver Medal from the Madurai Chapter of QCFL.

This Project won a Gold Medal from the Madurai Chapter of QCFL.

The Result

Energy savings achieved since 2009:

Year	Energy Consumption (Units) (A)	Production (Kg) (B)	Quantity produced per Unit (Kg/Unit) = (B/A)	% of reduction compared to previous year
2009-10	460,188	9,020,548	20	-
2010-11	303,334	6,951,453	23	15%
2011-12	295,884	7,611,611	26	13%
2012-13	258,052	8,240,671	32	23%

4 Making the Load Lighter with CFL

Tata Coffee Ltd., Balmany Devaracadoo Estate



The Challenge

Balmany Devaracadoo Estate is located at an elevation of 3,000 ft. in Coorg – one of India's most celebrated Robusta growing regions.

But this elevation and remoteness of location poses unique problems of energy supply and the employees and community at the estate have to bear high costs for everyday electricity.

The Change

In 2011-12, a project was initiated that encouraged replacement of incandescent bulbs with CFL bulbs. 275 households were covered over a period of two years. Apart from this the unit also organised regular awareness drives on the significance of saving energy and water for the community.

The Result

The overall impacts were effective and provided brighter lighting, **steep reduction in energy consumption** and high monetary benefits to employees as well as the local population.

Additionally, to encourage the project and make it a sustained effort, an award scheme has been set up for all employees, whereby a prize of INR 500 is given every quarter to the family consuming the least energy.

5 LEDing the Road Ahead

The Challenge

In an effort to shed light on avenues of conservation, sometimes the source, from which these lights emanate, is overlooked. The incandescent light bulbs and halogens are remnants of an era gone by. They consume a lot of power for comparatively meagre illumination. Their easy availability and cheap price has saved them from being replaced. But the time has come to move to more efficient alternatives.

The Change

With an estimated higher energy efficiency of 80% - 90% when compared to traditional lighting and conventional light bulbs, the impact of LED lights cannot be understated. Not only do they produce the same amount of light using less energy, they also last longer.



An LED light that is used for 8 hours per day, would still last for around 20 years.

At Tata Global Beverages, across units, there is a focussed drive to adopt LED lights.

The next table gives a glimpse of interventions at different locations wherein energy-intensive lamps have been replaced with energy-efficient LED lamps.

Location	Intervention		Savings in Energy
TGB Ltd., Kellyden Packaging Centre	No. of LED lights (150 W) installed	9	Everyday saving in kW achieved is equivalent to 18 kW of Load
	No. of Sodium Vapour Lights replaced	15	
	Daily Power consumption of 9 LEDs	27 kW	
	Daily Power consumption of Sodium Vapour Lights	45 kW	
TGB Ltd., Indore Packaging Centre	No. of LED lights installed 90 W = 4 & 120 W = 5	9	Annual savings in wattage is 2,365.2 kW
	No. of Halogen lamps replaced	10	
TGB Ltd., Nonoi Packaging Centre	No. of LED lights installed 116 W = 4 & 150 W = 5	9	Everyday saving in KW achieved is equivalent to 20.72 kW of Load
	No. of Sodium Vapour Lights replaced	15	
TGB Ltd., Kolkata Packaging Centre, Coalberth Unit	No. of CFL of 36 watts replaced	4	Annual savings in wattage is 1663.2 kW
	No. of CFL of 18 watts replaced	16	
TGB Ltd., Damdim Packaging Centre	No. of LED lights installed 116 W = 4 & 150 W = 5	9	Everyday energy savings achieved comes to 12.432 kWh
	No. of Mercury Vapour Lamps replaced	9	
TGB Ltd., Hyderabad Packaging Centre	No. of LED lights (55 W street light type fittings) installed	10	Estimated annual energy savings of 3,931 kWh
	Tube lights (40 W) replaced	40	

6 More Power to Power Factor

The Challenge

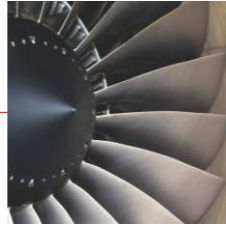
The Power Factor (PF) of an electrical power system is defined as a ratio of active power flowing (kW) and the apparent power in the circuit (KVA). It is a measure of how effectively the current is being converted into useful work output. A load with a power factor of 1.0 is ideal, while power factors lower than 0.90, are considered to be expensive and inefficient.

The Change

Automatic Power Factor Control (APFC) panels are used to improve Power Factor. **Successful installation and implementation of APFC panels has been achieved** at the following locations:

Location	Advantage	
TGB Ltd., Kellyden Packaging Centre	After installation of the APFC panel, the unit is achieving a Power Factor of 0.95 to 0.96	
TGB Ltd., Nonoi Packaging Centre		

7 A Breath of Fresh Air



The Challenge

A typical factory unit houses a variety of equipment such as FFS machines (containing heaters), pedestal sealer, stitching machines, compressor, dust extractor, vacuum conveyors, numerous lightings and around 70 to 300 workmen in a single shift. The overall ambient temperature in the shop floor rises significantly due to the collective heat generated via operating machines and human presence. Not only does this accelerate the wear and tear of machines, it also lowers the productivity of the workforce.

The Change

Air turbine ventilators provide an effective way to control shop floor temperature.

They do not require electricity for operation and work on the simple mechanics of the upward draft of hot air. Not only do they bring about a significant drop in the ambient temperature but they also enable supply of fresh air through doors and windows. **There is zero operating cost and minimal maintenance cost.**

Following units of Tata Global Beverages have installed air turbine ventilators in place of exhaust fans.

Location	Intervention	Advantage
TGB Ltd., Kellyden Packaging Centre	No. of air turbine ventilators installed	92
	Replacement for five 5 HP exhaust fans. Power required for operating them = 5 x 5 x 0.746 kW	Total saving from 92 air turbine ventilators is 18.65 kW
TGB Ltd., Indore Packaging Centre	No. of exhaust fans replaced with air turbine ventilators	10
	Replacement of 10 exhaust fans of 200 W each with turbine ventilators give a total wattage of 17,520 kW per annum	Total savings of 17520 units at INR 5 per unit = INR 87,600 per annum
TGB Ltd., Nonoi Packaging Centre	No. of air turbine ventilators installed	70
	Replacement of four 5 HP exhaust fans	Total saving from 70 air turbine ventilators is 14.92 kW
TGB Ltd., Kolkata Packaging Centre, Coalberth Unit	Replacing motorised roof extractors with air turbine ventilators	–
	Power required for operating = 4 x 5 x 0.746 kW	Reduced the power consumption (specially during winters) by almost INR 0.43 lacs annually
TGB Ltd., Damdim Packaging Centre	No. of air turbine ventilators installed	92
	Replacement for four 2 HP exhaust fans. Power required for operating = 4 x 2 x 0.746 kW x 2 shifts (14 hrs)	Achieved savings of 83.552 kWh per day
TGB Ltd., Hyderabad Packaging Centre	No. of air turbine ventilators installed	72
	Replacement of six 5 HP exhaust fans	Achieved savings of 22.38 kWh

8 Driving Energy Savings with VFDs



The Challenge

Pneumatic controlled Form Fill Seal machines are used for packaging tea and coffee powder into individual packs of predefined weight or size. Although the filling is intermittent in nature, the compressor needs to run continuously in order to

(a) maintain a constant pneumatic pressure even at fluctuating load levels

(b) conserve energy as an equipment always consumes more power during start-up

The Change

Installed Variable Frequency Drives (VFDs), which help maintain the requisite pressure and regulate the frequency of the compressor.

This not only results in energy savings of up to 80%, it also leads to less mechanical wear and tear, improved systems, reduced downtime, plus reduced equipment noise in the building.

Location	Intervention
TGB Ltd., Kellyden Packaging Centre	The new 75 HP Elgi Compressor is equipped with a VFD (Variable Frequency Drive)
TGB Ltd., Kolkata Packaging Centre, Coalberth Unit	Using VFD drive has brought down the energy consumption and there is a projected saving of almost INR 3.4 lacs annually on power and fuel cost



9 Harnessing the Power of Wind

Tata Coffee Limited, Instant Coffee Division, Tamil Nadu

The Challenge

The energy crunch keeps getting more acute with the passage of time. TGB Ltd. felt the pinch of this reality at its Instant Coffee Division (ICD) in Tamil Nadu. The state government introduced a new policy restricting the supply of electricity. This meant that an alternative method was to be found to meet the remaining energy requirement.

An immediate option was to increase generation of captive power. But this would have led to consumption of a non-renewable energy source (diesel) and a spike in carbon emission.



The Change

To reduce carbon emission the unit decided to opt for renewable energy by sourcing wind energy for two years from an Independent Power Producer (IPP). To ensure continual supply the unit entered into alternate agreements with the TNEB and purchased 19% of the IPP's equity. The wind energy was used to power Freeze Dried Coffee (FDC) unit.

As a result, carbon emissions were brought down from 12.45 to 9.52 kg CO₂e per one kg of produce.

The Result

Not only did the unit successfully overcome the obstacle of power shortage, it also achieved a 25% reduction in net CO₂ emission per kg of FDC produced. The unit has also developed a daily and monthly monitoring system to balance the supply and consumption of wind energy.

1. Fuelling Conservation

Tata Coffee Limited, Instant Coffee Division, Tamil Nadu



The Challenge

The rising cost of power and fuel is a cause of concern and was impacting the unit's competitiveness, especially in Instant Coffee Division. While the standard industry benchmark is INR 15/kg, the unit was hovering around INR 25.05/kg. They set themselves a target of reducing the cost from INR 25.05 in the year 2010-11 to INR 22.14 by 2012-13.

The Change

They conducted a Root Cause Analysis and identified the key causes contributing to this high cost. They included an inactive radiator in the spray drier, reduced power generation from DG sets and the rising cost of boiler fuel.

A three-pronged corrective action was undertaken:

Specific Area	Root Cause	Action Taken	Status
Power	Reduced power supply by TNEB	Energy to be sourced by a third party in place of DG operations	Implemented
Diesel	Inactive steam radiator	Radiator to be refurbished/replaced and to be taken for operations	Implemented and achieved annual savings of approx. INR 81 lakh
Boiler Fuel	Steep rise in prices of coal and husk	Analyse spending. Coffee waste to be used in the boiler instead of rice husk and coal	Around 10MT/day addition implemented

The Result

The following reduction was achieved after implementing the corrective measures:

Diesel cost down from INR 10.93/kg to INR 7.84/kg	Power cost almost remains the same even though the tariff has been revised. This is due to the implementation of third party power purchase instead of DG operations resulting in reduction of diesel consumption	Boiler fuel cost reduced from INR 8.04/kg to INR 7.67/kg
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With these three actions the unit succeeded in surpassing their target and achieved a cost of **INR 19.36** for the year 2012-13.

1. Compressing Consumption

TGB Ltd., Nonoi Packeting Centre



The Challenge

It was observed that the air compressor was consuming inexplicably high amounts of energy. Thorough examination of the situation revealed two main causes of the extensive energy usage - leakages and transit losses in the pipelines as some of machines were located at a considerable distance from the air compressor.

The Change

As a primary intervention, a meter was installed to monitor the actual energy being consumed by the air compressor. The power consumption per kg of packed tea for the month was recorded to be 0.025 kWh/kg.

Next task was to identify the leakages in the existing pipeline system and repair them.

Two air boosters were used to address the transit loss within the pipelines for the machines located at farthest end where the air pressure dipped due to the distance. These air boosters along with safety valve and pressure were fabricated and installed within the system.

Additionally, four essential steps were undertaken to further optimise the power consumption of the air compressor:

Ensured rated air pressure to the respective machines	Eliminated wastage of pneumatic power	Reduced power consumption by controlling the compressor functioning	Ensured longevity and optimum use of pneumatic system parts
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The Result

The three key impacts of the entire exercise were:

These corrective measures resulted in a reduced unit/kg consumption of 0.022 kWh/kg	Lower run time of the compressor, resulting in high power saving	Reduction in power consumption per kg of the air compressor by 0.003 kWh/kg	Optimum utilisation of the pneumatic power
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1. Ensuring Efficiency Automatically

Mount Everest Mineral Water Ltd., Himachal Pradesh



The Challenge

Energy being a key cost component, it is perennially in the cross hairs and the fact that energy saving also results in emission reduction is a bonus.

The Change

Mount Everest Mineral Water Ltd., Himachal Pradesh, implemented two projects that resulted in significant energy savings - installation of cooling tower fans and efficient light fittings.

Cooling tower fans are instrumental in blowing off maximum quantity of hot air to atmosphere. Usage of automatic switching multiplies the benefits as it helps save energy and ensures low noise operation, less maintenance, maximum air & pressure flow and high efficiency.

Another energy saving initiative was **replacing the tube light fittings with lower watt tube light fittings and metal halide fittings**. Metal halide fittings excel in areas of energy efficiency, long shelf-life, colour rendition and are compact in size. Of all light sources, the clean, white light of metal halide lighting produces illumination closest to natural sunlight, while older technologies used in general lighting provide a much narrower range of light output.

The Result

The unit achieved an energy saving of 40% from the installed automatic on-off switching of cooling tower fans. With an implementation cost of INR 5,500 and with only 15-day payback period, the two fans have given an annual saving potential of 18,900 units which translates into

annual savings of **INR 129,276**

With a payback period of 10.5 months, the new light fittings helped achieve

45% energy savings with annual saving of **1980 units equal to INR 13,543**

at an implementation cost of INR 11,800.



Energy saving for installed automatic on-off switching of cooling tower fans:

Machine	Connected Load (kW)	Running Load (kW)	Running hrs/day	Energy consumption per month (25 days, 0-units)	Energy consumption per year	Energy saving 40%	Energy charges per unit	Energy savings per year (INR)
Cooling Tower Fan-1	7.5	7.0	15	2,625.0	31,500	12,600	6.84	86,184
Cooling Tower Fan-2	3.75	3.5	15	1,312.5	15,750	6,300	6.84	43,092
Total	11.25	10.5	15	3,937.5	47,250	18,900	6.84	129,276

COOLING TOWER FAN-1

Date Nov. 2012	Time	Reading of kWh	Time	Reading of kWh	Energy Consumption in Units	Energy saving in %
25	6 am	1047	10 pm	1055	8.0	92.4
26	6 am	1055	10 pm	1064	9.0	92.4
27	6 am	1064	10 pm	1071	7.0	92.4
29	6 am	1071	10 pm	1079	8.0	92.4
30	6 am	1079	10 pm	1086	7.0	92.4
Average					7.8	92.4

- Connected load is 7.5 kW
- Actual running load is 7.0 unit per hour
- Total energy consumption per day (15 hrs.) is 105 units, without temperature controlling
- Setting temperature of temperature controller - 23 ± 1°C

COOLING TOWER FAN-2

Date Dec. 2012	Time	Reading of kWh	Time	Reading of kWh	Energy Consumption in Units	Energy saving in %
18	6 am	1633	10 pm	1643	10	81.0
20	6 am	1643	10 pm	1655	12	77.1
21	6 am	1655	10 pm	1664	9	82.9
22	6 am	1664	10 pm	1673	9	82.9
23	6 am	1673	10 pm	1686	13	75.2
24	6 am	1686	10 pm	1699	13	75.2
25	6 am	1699	10 pm	1713	14	73.3
27	6 am	1713	10 pm	1723	10	81.0
Average					11.25	78.6

- Connected load is 3.75 kW
- Actual running load is 3.5 unit per hour
- Total energy consumption per day (15 hrs.) is 52.5 units, without temperature controlling
- Setting temperature of temperature controller - 23 ± 1°C

Energy Savings through Efficient Lighting

Sr. No.	Location	Previous Light Fittings		Existing Light Fittings			Running Hrs.	Average Saving (INR)	
		Light Fitting Types	Qty. (Nos.)	Load (watt)	Light Fitting Types	Qty. (Nos.)			Load (watt)
1	Water Treatment	Tube Light Fittings T8, 80watt	8	640	Tube Light Fittings T5, 28watt	8	224	12	10,243.6
2	Packing Hall (Himalayan)	Tube Light Fittings T8, 40watt	2	80	Tube Light Fittings T5, 28watt	2	56	24	591.0
3	Packing Hall (Himalayan)	Tube Light Fittings T8, 80watt	6	480	Metal Halide Fittings 150 watt	2	300	24	4,432.0
					Metal Halide Fittings 70watt	1	70	24	-1,724.0
Total				1200		650		13,543.0	



13. Replace to Reduce

TGB Ltd., Damdim Packeting Centre



The Challenge

Ongoing businesses need to upgrade continually to stay competitive because rapid advancement in technology brings in new cost-efficiency benchmarks. The unit identified equipment which was hogging disproportionately large amount of energy and below mentioned two specific areas that demonstrated high benefit potential.

Modification of Heat Sealers

Replacement of old twin head FFS machine with high-speed 4 Head Machine

The Change

The core objective was to reduce the energy consumed by the vertical heat sealers (roller type) used for sealing poly-pouches of various sizes. The vertical sealers had 500 watt **cylindrical heaters which were replaced with jacket heaters and die rollers** in two of the 10 FFS Flex machines. Locally procured, these jacket heaters and die rollers are more energy efficient as they consume only 110 watt, deliver uniform performance and have a higher service life.

In a separate initiative the unit **replaced two old Twin Head FFS machines, with a new 4 Head FFS machine.** While the old machines consumed 57.60 kWh of energy per day, the new machine consumes only 36.60 kWh of energy per day, giving a daily saving of 21 kWh. While one twin head FFS machine was sold off, the second machine has been retained as a standby.

The Result

On implementation, the energy savings for two machines came to 21.84 kWh per day; when implemented across all 10 machines the total energy saving per day will be approximately 109.2 kWh.

The overall benefits of these two initiatives helped achieve:

Considerable reduction in energy consumption	Optimum utilisation of energy	Enhanced efficiency
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14. Rays of Sunshine

The Opportunity

One of the simplest, low cost methods of saving energy is eliminating the use of electrical lights during day time.

The Change

Transparent roof sheets were strategically placed to **capture maximum sunlight, improve visibility and eliminate use of any artificial light during the day.**

Location	Advantage
TGB Ltd., Indore Packeting Centre	Savings of INR 73,584 per annum
TGB Ltd., Kolkata Packeting Centre, Coalberth Unit	Achieved savings worth INR 40,000 by replacing GI sheets in the shop floor with transparent fibre sheets
TGB Ltd., Hyderabad Packeting Centre	Estimated annual energy savings of 10,800 kWh Annual monetary savings of INR 64,800

15. With Good Investments, Come Great Savings

TGB Ltd., Eaglescliffe, UK

The Challenge

Faced with the challenge of rationalising its energy usage, the Eaglescliffe factory in UK decided to take pre-emptive, preventive and corrective steps.

The Change

Four years ago, the Tata Global Beverages Eaglescliffe factory deployed a strategic planning and management methodology based on Hoshin, a concept popularised in Japan in the late 1950s by Professor Kaoru Ishikawa.

The concept works on the principle of empowering every employee to make a difference and leveraging their collective knowledge to achieve organisational goal.

Hoshin planning is a seven-step process that starts with the identification of key issues. The team at Eaglescliffe measured energy consumption across various units and processes and zeroed in on compressed air and lighting as the highest consumers.

Compressed Air

Optimising energy consumption of compressed air requires astute load balancing and meticulous leak control.

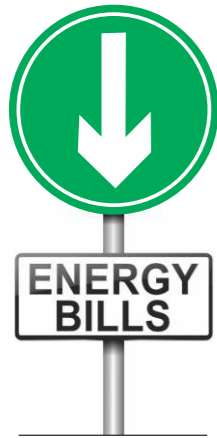
- **System design:** The most efficient way to run a compressor is on full load, but this is not possible if the demand from your equipment is variable. As a result the Eaglescliffe plant purchased two compressors; one to run on full load and a second with variable running output to efficiently match the production of compressed air with its demand.
- **Air leaks:** Air leak detection equipment was purchased and weekly inspections and repair regimes were implemented which subsequently saw the air demand reduce from 700 litres / second to 447 litres / second; a level which is measured daily and still maintained.

Lighting

The factory lighting system at Eaglescliffe had outdated technology. It was decided to upgrade the lights in a phased manner and the process began from the Softpack building which was the highest energy user.

- **Photo-Ionization Detection (PID) Sensors: 2008-09**
Replacement of old high bay lighting with T5 sodium lamps with PID sensors that automatically switch on and off depending upon the external light conditions.
- **External Lighting: 2011-12**
The team continued to pursue the area of energy reduction in 2011-12 and all the external lights were replaced with LED lamps.
- **Illumination Change: 2012-13**
Old fluorescent tubes were replaced with T5 sodium lamps on the factory floor providing enhanced light levels with reduced energy consumption.





These initiatives led to an ISO50001 Certification, which made the Tata Global Beverages one of 10 companies in the UK to be able to meet this standard and only the second player in food and beverage alongside Coca-Cola.



Various other projects were also implemented to reduce energy consumption.

- **Project Lean Gemba**
The Speciality factory in Greenford was moved to Eaglescliffe in 2000, which resulted in an extremely tight floor layout. Over time the business portfolio had changed and this offered the opportunity to re-layout the equipment and eliminate redundant conveyors.
- **Project Lasso**
Consolidation of manufacturing processes in the Drawstring and Speciality production halls helped reduce electricity costs, overheads and direct labour.
- **Softpack Dust Extraction Project**
There are three dust extraction plants at Eaglescliffe which remove potentially harmful dust to protect the health and well-being of employees. The system deploys large high energy fans. In 2009-10, the team identified the Softpack dust extractor to be using the highest electricity and installed inverter controlled electric fans which allowed a more controlled extraction.
- **Blending Extraction Project**
Armed with learnings from the Softpack plant, the team successfully implemented the same inverter drive and control system in the second dust extraction plant.

The Result

The compressed air Hoshin project has contributed massively towards a more efficient Eaglescliffe plant in terms of resource usage and also delivered **£42,000 towards electricity savings.**

The Softpack lighting project (PID) entailed a one-time investment of £55,000 but is **reducing energy costs by £18,200 p.a.**

The project cost of the External Lighting Project was around £10,500 and has **delivered £9,500 p.a. in energy savings** making it the fastest payback so far.

Capital costs of the Illumination Change project were £12,900 and it **reduced energy costs by £7,000 p.a.**

Reduction in the number of machines and lengths of conveyors achieved under Project Lean Gemba helped **reduce electricity costs by £5,000 p.a.**

Project Lasso delivered **£5,000 p.a. in energy savings.**

The Softpack Dust Inverter System saved 47kWh of electricity which translated in **savings of £24,000** while continuing to provide the level of dust removal demanded for the well-being of employees.

The Blend Dust Extraction Project was implemented at a cost of £79,000 and delivered **savings of £20,000 p.a. towards energy reduction.**

Environment Best Practices

WASTE MANAGEMENT

Waste is an inalienable truth of any production process. But it can be efficiently managed, effectively reduced and productively utilised using simple and ingenious methods.

Across geographies, our units reduce, reuse and recycle waste. These initiatives range from converting biodegradable waste into compost, to using spent tea as a source of burning fuel and recycling plastic as a packaging material.



Power from Waste

Lonach Dairy Farm, Sri Lanka



The Challenge

With over 150 cows, the Lonach Dairy Farm generates huge quantity of animal excreta every day.

The farm is situated at an altitude of 1,100 meters above sea level and waste disposal becomes a formidable task. Also being in a remote location the electricity from the grid is available only for a few hours a day and generation of captive power is expensive due to high transportation costs.

The Change

The farm, owned by Watawala Plantations PLC, initiated a novel biogas project to attain energy self-sufficiency and put the animal excreta to productive use.

Every day, the farm hygienically channelises the animal excreta from the cowsheds to the biogas plant in the same premises. The waste is fed into a complex machine called 'Digester' which processes and extracts methane gas. This methane is then piped and used to produce power.

The Result

Lonach produces 100 m³ of biogas and 140 units of electricity per day - making it one of the largest biogas producers in Sri Lanka.

Additionally, the slurry produced as a by-product, is an ideal compost and is extensively used to grow fodder which in turn helps reduce the operational costs even further.



The Art of Composting

Tata Coffee Ltd., Karnataka

The Challenge

Land has become a scarce commodity and landfills have become scarcer. The new found knowledge on the impact of landfills on ecology necessitated a need to look beyond the option of landfills as means of waste disposal.

The Change

Composting, especially anaerobic composting provided a viable solution. Unlike oxygen-based composting, the anaerobic method is one where bacteria break down the food scrap and other natural waste. It is a low maintenance method that does not require regular turning.

Using the anaerobic method, Tata Coffee Ltd., Karnataka, is effectively recycling agro-waste into 6,000 MT of compost annually, which it then uses to vitalise the quality of soil.

Major benefits of composting include:

Improved physical characteristics of soil	Enhanced carbon sequestration	Lesser dependence on chemical fertilisers	Reduced top soil erosion	Increased water infiltration and groundwater storage
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The Result

Through this initiative Tata Coffee Ltd. has been able to maintain 'Soil Nutrient Index' in the range of optimum to high levels, and despite continuous cropping, its agro production base (soil) has sustained over the period of years.

A Century of Service

TGB Ltd., Munnar, Kerala



The Challenge

Limited access to healthcare is one of the downsides of life in the hills. The ecosystem in these regions is also fragile as modern interventions to deal with human waste are literally absent. Munnar, situated at an altitude of 1,600 meters in Kerala is one such region. TGB Ltd. has substantial presence in Munnar and is committed to make a positive impact to the health of the inhabitants as well as to the ecology of Munnar.

The Change

Human Health

- Established over a century ago by Tata Global Beverages, the General Hospital at Munnar has been efficiently catering to the medical needs of the local community.
- Tribal welfare is one of the key focus areas of the hospital and various programmes are conducted to address the health needs of Muthuvans, one of the earliest inhabitants of Munnar.
- To combat HIV, an Integrated Counselling and Testing Centre (ICTC) which provides free screening of HIV, has also been established in the hospital.

Environmental Health

- The hospital has also undertaken multiple initiatives aimed at protecting the health of the Munnar ecosystem.
- Chemical Waste Disposal:** Instead of disposing drugs that are nearing their expiry date, they are sent back to the distributor. The decision to return the goods is taken during the quarterly drug committee meetings.
- Medical Waste Disposal:** The organic and inorganic medical waste is segregated in colour-coded bags and are regularly disposed through a certified contractor at a cost of INR 250,000 per year.
- General Waste:** General waste collected from all the wards is handed over to the Munnar Gram Panchayat for upcycling.
- Liquid Waste:** Wastewater from the hospital wards, canteen and kitchen is filtered and collected and treated by passing it through a sand filter, carbon filter and soak pit.

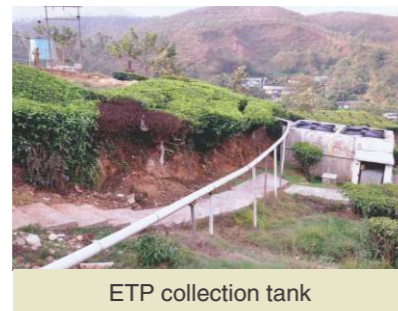
Air and Sound Pollution: The exhaust of the 125 KVA generator has been fitted with a muffler which helps reduce emissions and also keeps the decibel levels under check.

Rainwater Harvesting: Rainwater from the roof of the hospital is funnelled in to collection tanks and later utilised.

Energy Conservation: Tube lights in most areas have been replaced by energy saving CFL bulbs.



Colour-coded waste bins



ETP collection tank



ETP reactor and sand filter



Rainwater harvesting system



Tube lights replaced with CFLs

4. Unlocking Value from Waste

Tata Global Beverages (Tetley), Eaglescliffe, England
Instant Coffee Division, Toopran, Hyderabad
Ouvahkelle Estate, Sri Lanka

The Challenge

Sometimes, the waste though ubiquitous, is so small that it becomes difficult to address. Case in point, paper scrap from tea bags, coffee residue and tea dust.

The Change

- The Pelletiser plant at Eaglescliffe, England, compresses waste tissue, produced during the tea bag making process, into small pellets which are then screw fed and burnt in the boiler which is used to heat the factory.
- Tata Coffee Ltd., Instant Coffee Division at Toopran, Hyderabad has initiated a project to use coffee residue, instead of paddy husk and coal, to fuel the boiler used for roasting of green coffee beans. In fact, the spent coffee provides better alternative to paddy husk as it has a higher calorific value.
- The Ouvahkelle Estate in Sri Lanka makes briquettes from spent tea and tea dust rejects, and uses them as fuel in place of firewood which is economically and ecologically unviable. **The spent tea and tea dust go through an intricate process of moisture removal** (from 65% to 16%) before being **turned into briquettes.** The briquetting machine uses hydropower and hardly contributes to the operating cost of the estate.

Using waste as fuel provides the following advantages:

- The traditional fuel, which is usually a non-renewable source of energy, is either completely or partially substituted.
- The plant manages to do away with the waste disposal transportation cost.
- The plants gets one step closer to becoming a zero-discharge unit.



Briquettes in use



Mini hydropower plant



Briquettes made from tea waste

The Result

The 12 acres of barren land at Toopran which was earlier used to dump the spent coffee, has now been **developed into a green belt with 4,400 saplings.** The initiative has got appreciation from the Forest Department of Andhra Pradesh.

Ouvahkelle Estate has reaped huge savings as the cost of producing 1 kg of briquette is LKR 6.88 while the cost of per kg of firewood is LKR 18.

5. Biomass Briquettes

Tata Coffee Ltd., Tamil Nadu



The Challenge

Coffee/tea production is an energy-intensive process. The 6 million kg of tea produced per annum at five factories of Tata Coffee Ltd., Tamil Nadu would need firewood equivalent to 4,800 trees.

The Change

Every year tons of agricultural waste and forest residue like dry grass, wood shavings, sawdust husks, corn stalks, leaves is generated, which is either wasted or burnt inefficiently in loose form causing air pollution. Instead it **can be converted into high density fuel briquettes and become a sustainable source of energy.**

To reduce its impact on the environment, Tata Coffee Ltd. started using briquettes as an alternate fuel. Last season, 64% of the fuel used in the factories was biomass briquettes, thereby **saving around 3,000 trees.**

The advantages of using briquettes include:

Cost effectiveness: They are cheaper compared to firewood	More efficiency: They have a higher calorific value, are more consistent in quality and ideally sized for optimum combustion	Less polluting: As briquettes have a lower moisture content (10-12%) compared to firewood (25-45%), they produce less smoke
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Biomass briquettes produce low net total greenhouse gas emissions as the materials used in its production are already a part of the carbon cycle.



The Result

The use of briquettes has helped Tata Coffee Ltd. **save close to INR 10 million** for the year 2012-2013.

One Unit's Waste can be another Unit's Treasure

TGB Ltd., Tata Tetley Division, Cochin, Kerala

The Challenge

When a government regulation restricted Tata Tetley Division, Cochin - a 100% export oriented unit, from taking the waste outside its premises, the division was stuck in a conundrum.

It produces 2.5 MT to 3.5 MT of packaging wastage on a monthly basis and had no other option but to incinerate it.

The Change

Not wanting to incinerate paper and add to the air pollution, the division successfully approached the Government with a proposal to sell the paper waste to recycling units at a nominal rate. **A shredding machine was installed** at the factory for processing of packaging wastage. **The waste was recycled and used by the units to make paper boards.**

But not all paper waste is suitable for recycling. The division has three heat-sealable round tea bag machines which generate design wastages of filter paper called cutting waste. As cutting waste has plastic fibres in them, it cannot be recycled.

In order to responsibly dispose the non-recyclable waste, the division got in touch with Tata Ceramics unit, Cochin which buys cutting waste from various paper mills for packing their crockery products. The unit now buys the cutting waste from the Tetley Division at a nominal price.

The Result

Today, not only is Tetley Division, Cochin saving almost 1.5 MT of wood by recycling 1 MT of printed paper, it has also established a steady source of income from sale of cutting waste, that can be further **reinvested into other green initiatives.**

Living Activated. Living Sustainable.

ACTIVATE®, Los Angeles, USA



The Challenge

Majority of plastic water bottles do not make it into the recycling stream and land up in landfills, where they live on and on.



The Change

ACTIVATE® which provides water with vitamins, antioxidants and other supplements **made a decision to switch to a fully recyclable PET 1 bottle.**

To embed recycling as a habit in the workforce, recycling bins have been placed across the corporate office. The field team recycles all products they use at events, which includes bottles, packaging and even the sampling cups.

The Result

Every year **ACTIVATE® recycles 125,000+ bottles.** As per estimates, recycling one pound of PET bottles saves approx. 12,000 BTUs (British Thermal Units) of heat energy, thus **ACTIVATE® saves approx. 1 million BTUs of heat energy every year.**

Waste Management Begins at Home

Pullivasal & Periakanal Estates, Munnar, Kerala

The Challenge

With over a 1,000 households of varying income strata and literacy levels residing in the estate, there was a menace of strewn plastic and glass waste across the estates, plus the danger of diffusion of mercury fumes from used / damaged CFLs.

The Change

All households were educated in waste management and have since made it a habit to segregate domestic waste into degradable and non-degradable category. The non-degradable waste is then collected in the estate vehicles and sent to the local panchayat dumpyard, while the degradable waste is allowed to decompose.

The residents are also sensitised **not to dispose damaged CFLs along with normal waste.** Instead, these are collected at designated points in the estates in order to finally dispose them into specially built tanks. Free eco-friendly shopping bags have been provided to the households with the assistance of local bodies to **reduce the use of plastic carry bags.**

Apart from the 'waste management' campaign, several other conservation initiatives are being undertaken:

Using transparent fibre-glass sheets on the roofs of the factories and labour lines - average power savings of 20%	Facilitating CFLs to all employees at subsidised rates - power consumption reduction by 80%	Planting of wonder grass along steep roadsides and embankments to prevent soil erosion and landslips
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The Result

A cleaner estate with empowered families who have taken charge of their waste. Plus, the momentum from the waste initiative has cascaded into

energy saving initiatives and environmental protection.



Eco-friendly bag distribution



Wonder grass working its wonder



Natural light being put to good use

E-Waste Recycling

TGB Ltd., Canada

The Challenge

Electronic and electrical waste poses a serious environment threat as it may contain contaminants such as lead, cadmium, beryllium, or brominated flame retardants. Incinerators are ruled out because e-waste releases toxic fumes. Recycling of e-waste is the only viable alternative.

The Change

In 2012, TGB Ltd., Canada collected 2,420 lbs of e-waste an increase of 8.5% over previous year. This includes waste such as batteries, toner cartridges, cell phones etc.

The Result

78.5% of the e-waste generated was collected for

recycling and diverted from landfills.



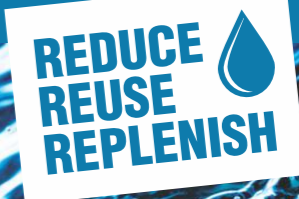
Environment Best Practices

WATER MANAGEMENT

Water is essential to sustain life. Rapid economic growth and urbanisation have enhanced demand and have led to shortages in many geographical pockets.

The use of water in a rational and sustainable manner, is one of the critical challenges for the world today.

At Tata Global Beverages, we are increasingly focussing on conservation and sustainable use of water.



1. Harvesting Water Leads to a Better Coffee Harvest

Tata Coffee Limited, Plantation Division, Pollibetta, Karnataka

The Challenge

Long-term shortage of water, especially in the critical stage of flowering and fruit set, can severely affect coffee productivity.

The Change

With the water harvesting initiative, we have been able to sustain our coffee plantations, which are highly dependent on rainwater as a primary source of irrigation. The Plantation Division at Pollibetta harvests rainwater in two ways. Firstly, it channels it through gravity drains to 226 tanks. Secondly, through a **Global Positioning System** survey, reservoirs have been identified in the estate and excess rainwater is diverted to and stored in these reservoirs.

The reservoirs, over and above storage of water, also enhance the water table of the estate. Deep-rooted trees in the estate act as a hydraulic lift, wherein they absorb water from deep down in the soil and bring it to the soil surface, which helps meet the water requirement of smaller plants like coffee.

Good water management has also assisted in arresting soil erosion.

The Result

Total area converted to reservoirs and 226 tanks is 110.19 ha with **water holding capacity of 10,408 ha inches** or 26.41 lakh cubic meters.

A total of **583 million gallons of rainwater** is being harvested and it has enhanced the sustainability quotient of the estate.

The initiative has also led to preservation of flora and fauna, and provided a drinking water source for wild animals.



Rainwater harvested in reservoirs

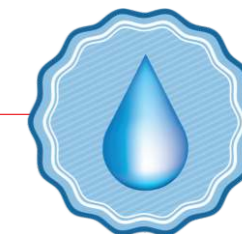


Rainwater harvested in tanks

Pisciculture, rearing of fish under controlled conditions in the tanks and reservoirs, helps in natural purification of water bodies.

2. Managing Demand and Supply

Pullivasal Packeting Centre, Munnar, Kerala



The Challenge

To not let water become a bottleneck to business continuity.

The Change

Pullivasal Packeting Centre at Munnar adopted a holistic approach towards water management and sustainability.

It has taken some key initiatives to enhance supply, one of which is to **build a rainwater harvesting facility with a capacity of 25,000 litres** and plans to double this capacity in the near future. It has also made provisions to ensure that excess rainwater is routed through the stormwater drain into the nearby canal which eventually ends up in a river.

To keep a tight leash on demand, every drop used in the factory or in the field is accounted for. **One of the Key Result Areas of the managers is to monitor and control the water consumption.** To assist them in their task, water meters have been installed and the usage is logged in on a daily basis. Managers also conduct an internal audit and inspection every three months to ensure that water pipelines function without any glitch.

Factory employees are required to take an oath that they will avoid water wastage.

The Result

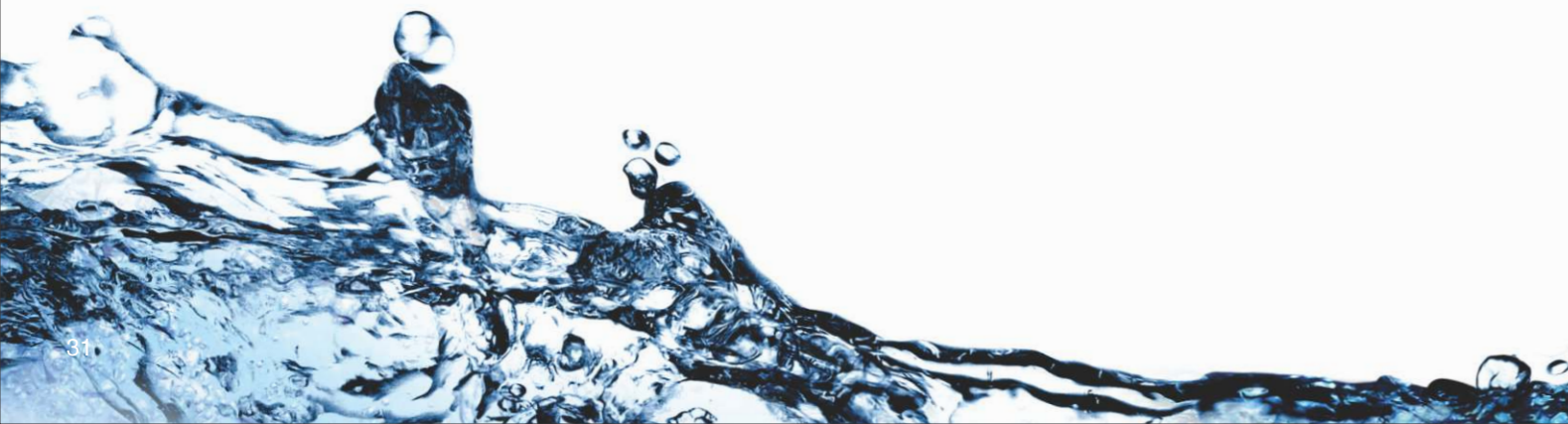
Effective water management and the factory, together are working towards increasing the water level in its immediate geography.

3. Smarter Water Consumption

Tata Global Beverages, Canada

In 2011, TGB Canada installed a new smart meter irrigation system.

This irrigation system regulates irrigation by monitoring the soil moisture levels and thus preventing over-watering of the grounds. Since the installation of this equipment, **the unit has reduced water consumption by 17%.** The building is also equipped with low flow toilets and hands-free faucets.



4. No Water is Waste

Mount Everest Mineral Water Ltd., Dhaula Kuan, Himachal Pradesh

The Challenge

Water is the core raw material for Mount Everest Mineral Water Ltd.

The company is engaged in the production of natural mineral water, which intrinsically generates large quantities of wastewater.

The Change

Mount Everest Mineral Water Ltd. is leaving no stone unturned to reduce its freshwater consumption. The wastewater from the plant is collected in an underground tank and used for gardening.

The company saves around 40,000 litres of freshwater per day through this initiative.

Since July 2012, the plant has been recycling the water collected from rinsing and backwashing, to reuse it for gardening.

The Result

Improved water ratio from 1:4.6 to 1:3.45 (water used for every litre of finished product packed)

Savings in royalty paid for water extraction to the groundwater authority, and in the cess paid to the pollution control board.



Underground tanks for collecting wastewater



Recycled water being used for gardening

Environment Best Practices

GREEN COVER

Being a global leader in beverages, the nature of our business makes Nature, a key stakeholder. We understand that conservation must be in consonance with our growth as an organisation and are **determined to build, sustain and enhance environmentally sustainable practices across operations.**

Here are some initiatives that express our proactive approach towards nurturing nature. These initiatives are powered by sustainability champions who strive tirelessly and innovatively to make a positive impact.



The Alliance for Sustainability

TGB Ltd., Stansand (Africa) Ltd. (Subsidiary)

Rainforest Alliance (RA) links responsible companies with a secure supply chain of sustainably produced goods and services.

The Rainforest Alliance Certification for farms covers ecosystem conservation, worker rights and safety, wildlife protection, water and soil conservation, and agrochemical reduction among others.

Being the world's second largest tea brand with presence in 70 countries, Tetley's active participation in the Rainforest Alliance has a wide-reaching

positive impact across global supply chains.

To encourage new producers to achieve Rainforest Alliance Certification and to transform the tea industry into a more sustainable one, RA conducted several workshops for significant tea producers in Uganda, wherein George Waireri of Tata Global Beverages played a pivotal part as a key speaker.

As of September 2012, **50% of Tetley Tea, which amounts to 20,000 metric tonnes, is Rainforest Alliance Certified™.** Tata Global Beverages aims to achieve 100% RA certification for the entire Tetley brand by 2016 and is proactively providing training and support to all its producers.

Conservation - Packed and Sealed

TGB Ltd., Pullivasal Packeting Centre (PPC), Munnar, Kerala

The Pullivasal Packeting Centre at Munnar, Kerala, has incorporated several environment-friendly practices ranging from increasing the green cover to reducing energy consumption.

This year, 200 saplings were planted on World Environment Day and an **insightful talk on 'The need for preserving nature'** was hosted in partnership with forest officials.

Key initiatives undertaken at Munnar include:

- Sapling plantation within the factory premise and in the surrounding areas is an integral part of the unit's employees' annual calendar.
- Quarterly Internal Environmental audits
- Participation in the Earth Hour initiative
- Implementation of numerous Kaizen and QC projects to reduce energy consumption
- Replacement of sodium vapour and mercury lights with LED lights and CFLs
- Subsidised CFL lamps made available to all employees



Increasing the green cover is a continuing initiative at PPC Munnar

Boosting the Bamboo Groves

Tata Coffee Limited, Pollibetta, Karnataka

For harvesting pepper, TGB's facility at Karnataka traditionally utilised bamboo ladders sourced through the Forest Department.

The pepper plant is a perennial woody vine growing up to four meters on supporting trees and poles. As the bamboo groves are crucial to a **fast-disappearing ecosystem and habitat,** a decision was made to replace these bamboo ladders with Fibre Reinforced Plastic (FRP) ladders. Studies were considered to ascertain the viability of FRP as a replacement to bamboo and a supplier was identified for sourcing the new ladders.

In addition to preserving the bamboo groves, FRP ladders give following benefits:

Longevity & Durability:

Traditional bamboo ladders last for about two years, FRP ladders last more than 20 years

Convenience & Safety:

FRP ladders are comparatively light weight, safer and more convenient

Planting Seeds of Sustainability

Watawala Plantations PLC, Sri Lanka

The Challenge

Fuel imports constitute roughly 20% of Sri Lanka's merchandise import bill.

This is economically and environmentally unviable. Firewood, though a cheaper option, could accelerate deforestation. So, TGB's unit at Watawala Plantation in Sri Lanka decided to explore options to traditional firewood.

The Change

They chose to concentrate on Sustainably Grown Fuel (SGF) wood of Short Rotation Coppice (SRC) species, rather than forest wood or other non-sustainable resources.

Two species, Calliandra calothyrsus and Gliricidia sepium, were chosen for the following reasons:

● High calorific value	● Coppicing and pollarding availability
● Nitrogen fixing property	● Adaptability to a wide range of sites and soils
● Disease resistance	● Ability to suppress weed competition
● Moisture content around 20%	● Rapid growth rate

It was calculated, that in order to substitute the firewood required to process black tea from the Company's upcountry segment of the plantation, around 700 hectare of land would have to be cultivated with mature Calliandra and Gliricidia.

Planted at an average stand of 6,500 trees to a hectare, this would result in 4.55 million trees.

With a cubic meter of Calliandra firewood costing under INR 800 as against a cubic meter of rubber firewood costing INR 2,500, this project will significantly reduce the cost of firing.



The Result

As of March 2012, the unit has about

488.5 hectares under Calliandra in all upcountry estates. At the current pace, it will become self-sufficient in the year 2015, for the fuel requirements of withering and drying processes.

5. The Green Touch

TGB Ltd., Pakistan

The Challenge

Depleting green cover and increasing waste, is posing a sustainability threat, not just to economic growth but also to human well-being.

The Change

Towards the commitment to Go Green, TGB Ltd., Pakistan **has planted 87 small and large trees ranging from Neem, Tamarind, Dates, Mango to various shrubs.** Additionally, a 1,000 square yards field has been developed and nurtured which yields sunflowers, watermelons and different vegetables.



Also, to ensure best from waste, the unit has started recycling non-biodegradable waste at its contractors' facilities, thus also embedding green consciousness in the vendors.

Environment Best Practices

HEALTHY AIR

A good work environment, devoid of dust is not only mandatory, but also beneficial.

It is **advantageous as it leads to good health and improves productivity.**

When TGB Ltd. took initiatives for reducing the dust in its units, it found many other positives as well, like reduction in power bills, better housekeeping etc. In short, less dust is more just, as the following case studies show.



Eliminating Particulate Dust

TGB Ltd., Kellyden Packeting Centre, Assam

The Challenge

At Kellyden Packeting Centre in Assam, the installation of a Vacuum Conveyor (VC) lead to increased suspended tea dust particles and noise in the unit. This directly impacted the working environment, posed a health hazard for the employees plus raised hygiene and housekeeping challenges.

So, it was imperative to control and reduce suspended dust particles within the unit.

The Change

It was found that because of its design, the exhaust from the blower of the Vacuum Conveyor was releasing large amount of dust particles in the atmosphere.

A scientifically designed pipeline network connecting the exhaust of the Vacuum Conveyor to the existing dust extraction system was put in place.

This ensured that the **dust particles being released from the exhaust were efficiently sucked into the dust extraction system.**

The Result

As demonstrated by the 'before and after' trial implementation data, **fine dust particles were eliminated from the work area.** A drastic reduction in noise levels was also observed.

This success has encouraged the unit to implement this solution wherever they have Vacuum Conveyors.



The dust extraction system has come as a breath of fresh air at Kellyden

Two Filters Better Than One

TGB Ltd., Sonapur Packeting Centre, Kolkata

The Challenge

At Sonapur PC unit, dust in the AC shop floor was hampering the performance of the AC which in turn was resulting in higher energy consumption. The dust was also a health hazard.

The Change

On analysis, it became evident that tea dust, being nano size cannot be restricted from entering the cooling coils by just one set of filters. **Hence a double filter arrangement was made with an efficient cleaning mechanism.** Since the filters were located 12 feet high, a staircase was fitted to the wall to facilitate easy access. Also, new bigger drainage lines, without any bends, were installed to allow the water from the ACs to flow out without any hindrance.

Portable dust extractors were attached to individual machines, so that dust could be arrested right from the machine dozing and folding points. The outlets of these dust extractors were directed into a bigger outlet pipe, which opened outside the premises.

The Result

Considerable **dust reduction** was achieved.

The **power consumption was further reduced** by utilising only two ACs at one point of time. This resulted in negating the need of buying a new AC.

What gets Measured gets Managed

TGB Ltd., Eaglescliffe, UK

The Challenge

Eaglescliffe in UK has slowly transformed from an industrial hub to a residential neighbourhood.

This has made it imperative for the unit to control and minimise its plant noise and air pollution levels.

The Change

The noise pollution at Eaglescliffe has been kept under check through regular noise surveys. Additional maintenance **plans have been chalked out with a special focus on reducing noise.**

The key source of emissions is the burning of pellets and coal in the boiler stack. An automated emissions measuring system is deployed to meticulously measure and help minimise pollution.

The Result

Adherence to regulations of the local council and environmental bodies, plus a demonstrated **proactive stance towards community concerns.**

Transforming communities through proactive interventions has been an integral part of Tata Group, long before corporate responsibility became a buzz phrase. Across TGB Ltd., we have nurtured and encouraged our businesses to proactively engage with the community and champion causes which are real and relevant.

Employee volunteering forms an integral part of our community intervention programmes. It provides employees, a platform to play a vital role in **driving positive change in the communities.**

Our community programmes focus on areas such as food, clothing, education and healthcare.



Combating Cancer with Joy & Happiness

Tata Starbucks Ltd., Mumbai, Maharashtra

Having a child diagnosed with cancer is one of the most traumatic events for a family and can lead to emotional and financial upheaval.

Located within the premises of Kharghar's Tata Memorial Hospital, St. Jude India Child Care Centre offers solace to children being treated for cancer.

For these **kids who undergo painful chemotherapy sessions**, the centre provides a space for expression to **help them heal emotionally**. St. Jude organises activities that help build self-confidence, wherein parents too can participate along with their children.

With an aim to make a difference to the lives of these little warriors, Tata Starbucks joined hands with St. Jude Foundation to plan and implement various activities for these kids. A framework has been put in place in collaboration with various

St. Jude centres to host sustainable, **high impact activities** on a monthly basis. They include birthday celebrations, donation of books, games, fruits, toys etc. and maintaining the organic garden to ensure consistent supply of nutritious vegetables.

The Tata Memorial Centre offered approximately **21,780** sq. ft. of land to develop an organic garden

144 volunteers from Tata Starbucks came together to nurture it, along with the children

One of the spearhead activities was the development of an organic garden. The Tata Memorial Centre offered approximately 21,780 square feet of land in its compound to enable volunteers, to grow organic food for the cancer affected children.

Over a period of two days, 144 volunteers from Tata Starbucks came together to develop this organic garden along with the children. The harvest from the garden will be used for making rich nutritious meals for the affected children.

Over and above farming that included weeding, planting, watering etc., a series of **fun-filled activities** like distribution of fruits, pastries, stationeries and games, saw **the children's faces light up with joy**. Birthdays were celebrated with remarkable zest and vigour, transforming the day into a cherished gift for the children.



Helping kids heal emotionally



Organic Garden



Collection of dry mulch



Farming in action



Service to Man is Service to God

TGB Ltd., Australia, TGB Ltd., Canada and TGB Ltd., New Jersey - USA

A major portion of the population across the globe is bereft of even the most basic necessities of life - food, clothing and shelter.

TGB employees volunteered to devote their time and efforts towards these people, **to put a smile on their faces and warmth in their hearts**. Here are some initiatives from our units across the world.

Tata Global Beverages, Australia

Sacred Heart Mission (SHM) enables hundreds of homeless, socially disadvantaged and isolated people, gain access to food, care, shelter and support. The dining halls managed by SHM have become a vibrant social space and helps the deprived develop a sense of belonging.

TGB Ltd., Australia supported the SHM meals programme through volunteering. Over a period of two days, volunteers participated in cooking, cleaning and serving meals to the homeless. The volunteers served breakfast and lunch, reaching out to over 1,000 people, thereby making a positive contribution in their immediate community.

Tata Global Beverages, Canada

The Daily Bread Food Bank - Toronto's largest food bank, fights to end widespread hunger amongst the approximately 3 million low-income Canadians. During the fall of 2013, TGB Ltd., Canada volunteers helped sort the donated food at The Daily Bread Food Bank.



Feeding the needy

Tata Global Beverages, New Jersey, USA

TGB Ltd., New Jersey volunteers reached out to the homeless by supporting a Salvation Army clothing mobilisation drive.



Volunteers at Sacred Heart Mission (SHM) meals programme

3. Giving Wings to Little Dreams

TGB Ltd., Bengaluru Packeting Centre, Karnataka

Education empowers children, enabling them to realise their potential and earn their place in the society.

TGB supports organisations, working towards educating children from deprived communities.

Abilashrayam Trust is a registered Indian non-government, non-religious, non-profit, social service organisation, working on child rights, senior citizen rights and rural development across India. Under its flagship programme **'I Support'**,

Abilashrayam provides education to orphaned, abandoned and underprivileged children. Along with education, it also provides food, shelter and clothing, plus caters to the emotional and intellectual needs of the children.

The TGB - BPC team galvanised contributions from employees and donated money to Abilashrayam, which will be used to help pay school fees for the children ensuring sustained quality education.

A medical camp was also organised for the children.



Enabling a better future for underprivileged children

4. Crisis at Christmas

TGB Ltd., Greenford - UK

Homelessness deprives one of, not just a shelter, but also a life of dignity and opportunities of growth.

Since 2011, the culture champions of Tata Global Beverages, Greenford have been actively involved with 'Crisis at Christmas', a UK based national charity. This NGO is **dedicated towards ending homelessness by delivering life-changing services** in their walk-in aid centres, and campaigning for change.

'Crisis at Christmas' hosts homeless guests between 23rd and 30th December and is UK's largest volunteer led event. TGB volunteers have been lending a helping hand to this initiative by donating tea, recycling, cleaning, painting, preparing beds, moving furniture and a host of other activities.

Over 200,000 Tetley Tea bags have been contributed every year.

Together with TGB Greenford's resources and support, Crisis hosted 600 people for 8 days over Christmas.

Nine centres were set up across London, where 8,000 volunteers:

- Prepared 21,000 meals
- Distributed nearly 400 pairs of shoes
- Provided personal consultation on a wide range of issues such as employment, benefits and housing to hundreds of guests



Volunteers working at the Crisis warehouse during 2011 and 2012

5. For the Common Good

TGB Ltd., Munnar, Pullivasal Packeting Centre, Kerala

Enhancing public infrastructure results in an improved standard of living for the masses.

Seeing the dilapidated state of the KSRTC bus depot at Munnar, TGB Ltd., initiated a community project to upgrade and improve its infrastructural facilities.

Volunteers from TGB Ltd., Munnar **worked tirelessly to clean the bus station, install waste bins and repair non-functional street lights.** The volunteers also donated a day's wage to the activity.

The facilities which were upgraded include:

- The unused well was cleaned and a new cover installed, making it the main source of water for the depot
- Installation of a water pump
- Installation of a water purifier providing clean drinking water
- Repaired non-functional street lights
- Installation of 3-seater iron chairs
- Aluminium waste bins to collect garbage
- Installation of a wash basin
- Cleaned the surrounding areas and planted trees



Over and above a clean bus depot, passengers can now have access to drinking water and an area to sit while they wait. The initiative was an incredible experience for the volunteers.

Gift of Kindness

South India Primary Buying Centre, Willingdon Island, Cochin, Kerala

Employees of PBC, Cochin volunteered at the Palluruthy Relief Settlement Centre.

They served breakfast to about 220 inmates and **gifted 30 kg of tea.** Tea gifting is an ongoing endeavour and the unit annually **gifts approximately 2,620 kg valued at INR 210,000 to the impoverished.**



Promoting Humane Treatment towards Animals

TGB Ltd., England

RSPCA (Royal Society for the Prevention of Cruelty to Animals) works towards rescuing and providing a shelter for animals.

RSPCA is the oldest and largest animal welfare organisation in the world.

TGB Ltd., England joined hands with RSPCA to support a variety of animal welfare and adoption projects. **Employees donated unwanted towels, blankets, and duvets to the RSPCA rescue centres.**

Books were donated to be sold in RSPCA charity shops. Money was also raised by transferring items like mobile phones and digital cameras to recyclers.



Partnering with Unnati for Progress

TGB Ltd., Bengaluru, Karnataka

More than a decade into the new millennium, India is still grappling with large-scale unemployment amongst its youth.

The major reasons being **inadequate access to education and skill development facilities.** Timely interventions are necessary for addressing these problems.

Unnati, a Bengaluru-based initiative drives affirmative action for Below Poverty Line youths through its 70-day vocational training programme. The Bengaluru headquarters of TGB Ltd. has been continually partnering with Unnati by sponsoring youths and employing them. It has also encouraged Unnati to start a new curriculum in field sales for FMCG business.

Since 2012, TGB Ltd. has **sponsored 152 youths** and has also employed them on successful completion of the programme. As of September 2013, another 25 individuals are undergoing training.

So far, the Bengaluru unit has **invested INR 18.24 lakhs** towards the future of these youths and has earmarked an additional INR 9 lakhs for the ensuing financial year.

Srishti Facilitates Livelihood for Differently Abled

Srishti Welfare Centre, Munnar, Kerala

The abilities of the differently abled are still largely untapped.

Given **the right support, education and training, these individuals too can become contributing members of the society.**

In order to mainstream these citizens back into the society, the Munnar unit of TGB Ltd. established Srishti Welfare Centre. This Centre, comprising various units, introduces special education to children with special needs, and provides vocational training to the physically and mentally challenged youth. Here is a broad overview of Srishti's initiatives.

Special Education

The DARE School has 57 differently abled students and **provides personalised instructions** based on individual capabilities.

A preschool has been established for the children of the specially abled employees of Srishti, so as to help them get admission in good schools.

Livelihood Training

Various units like Strawberry Preserve Unit, Aranya, Athulya, Vocational Training Centre and Confectionery Unit **impart specialised training for production** of natural strawberry preserve, stationery items, handmade paper items, confectionery products, and vocations like natural dyeing, horticulture and floriculture.





Drink

THINK•EAT•SAVE

WORLD ENVIRONMENT

DAY 5 JUNE

IMAGE GALLERY



Sapling distribution drive at TGB Ltd., Kellyden



Tree plantation at TGB Ltd., Aurangabad Packaging Centre



Sapling plantation drive at Srishti Welfare Centre



WED activities at MEMW plant, Paonta Sahib



Audience being addressed during WED event at TGB Ltd., Bengaluru



Nature awareness march at Srishti Welfare Centre



WED celebrations at TGB Ltd., Mumbai office



Student's art at Srishti Welfare Centre



WED event being celebrated at Athulya Unit, Munnar



WED activities at MEMW plant, Paonta Sahib



Plantation drive at MEMW plant, Paonta Sahib



Plantation drive at ITO, Munnar



WED activities at Sonapur and Coalberth



Prize distribution to quiz winner at TGB Ltd., Bengaluru



Sapling plantation at PPC, Munnar



Sustainability posters at TGB Ltd., Mombasa



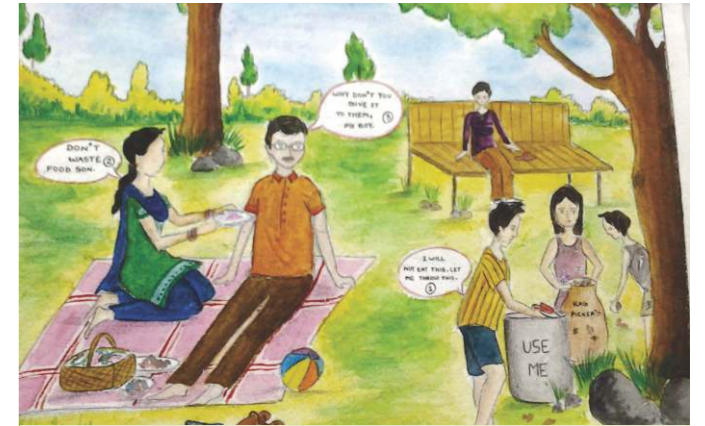
Slogans by employees at TGB Ltd., Indore



Talk on importance of WED at TGB Ltd., Bengaluru



Presentation on WED at TGB Ltd., Mombasa



Painting by an employee's child



Plantation drive at TGB Ltd., Indore



Plantation drive at Srishti Welfare Centre



Plantation drive at Srishti Welfare Centre



WED celebrations at Srishti Welfare Centre



Employees attending the WED event at NONP



Planting tree saplings at ITO, Munnar



Employees participating at PPC, Munnar



Sapling plantation drive at PPC, Munnar



Creche at Srishti Welfare Centre



Sapling distribution at TGB Ltd., Delhi

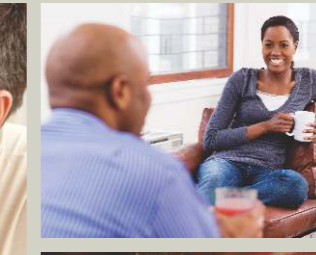


Team with sustainability posters at TGB Ltd., Mombasa



Prize distribution ceremony at TGB Ltd., Kellyden

Let's make life beautiful, one sip at a time





TATA GLOBAL BEVERAGES

Registered Office :
 1 Bishop Lefroy Road, Kolkata - 700 020
 Telephone : 033-22811807/3709/3779/3891/4422 | Fax : 033-22811199
www.tataglobalbeverages.com