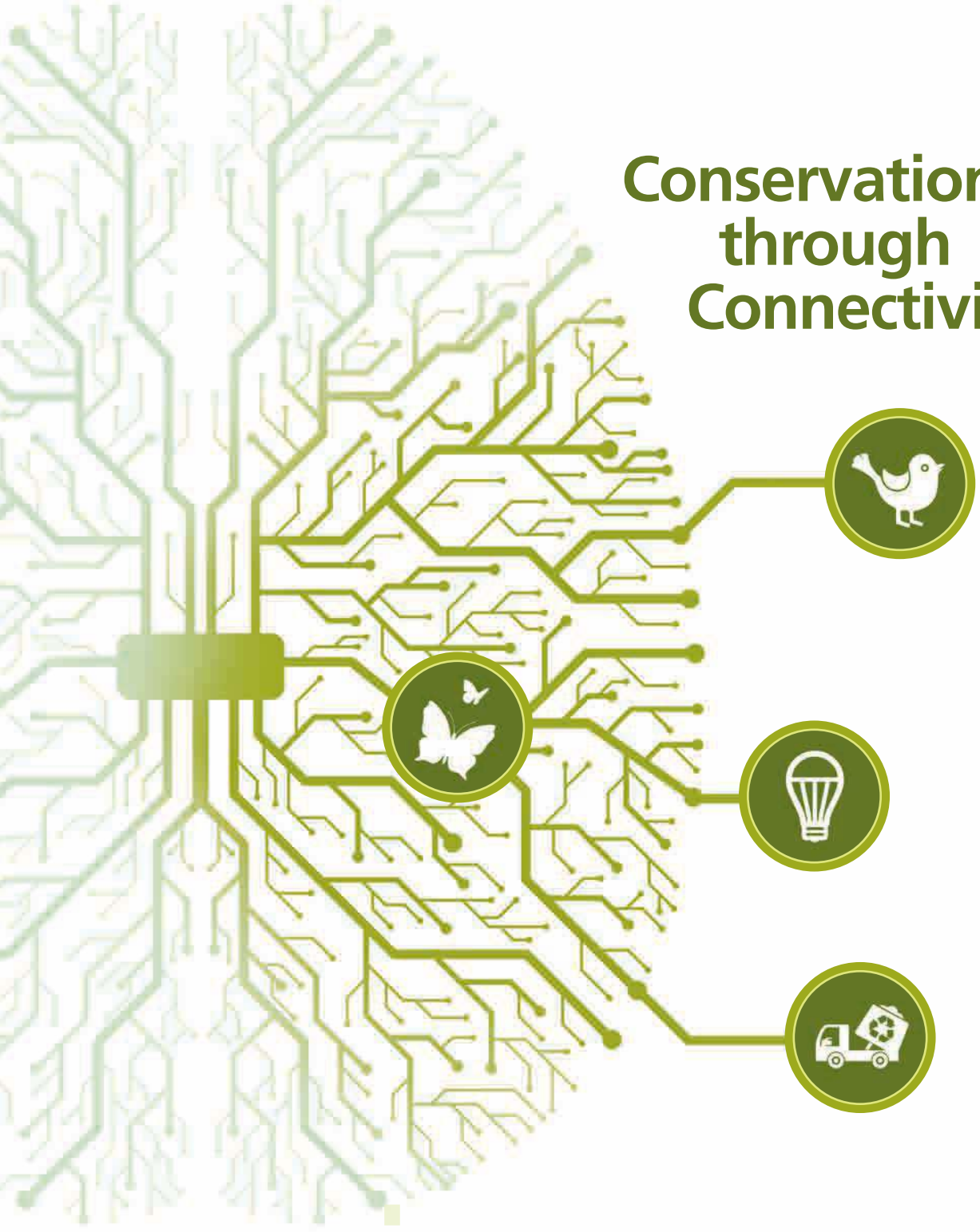
Conservation through Connectivity



environment performance

Environment Performance

At L&T, we constantly scout for ways and means to reduce the environmental impact of our operations and campuses. We are guided by international conventions on mitigating climate change, and our own conscience, as we move towards a green future. Our environment protection initiatives focus on minimizing use of natural resources, building efficient infrastructure, reducing emissions; and more importantly bringing about a behavioural change in stakeholders, to successfully sustain our efforts.

L&T's Corporate Environment, Health and Safety (EHS) Policy defines our business philosophy on environment management. We have a team of dedicated EHS managers at our facilities and project sites, to implement the policy initiatives. The workforce is regularly trained on aspects of environment conservation, to ensure smooth implementation. Since 2009, we have been setting environment-based targets for ourselves, as a part of our Sustainability Programme. We are currently implementing the third Sustainability Roadmap 2021. To ensure that our targets are met, we review our environment performance periodically at the business and corporate level. We also ensure our critical suppliers implement our Environmental and Social Code of Conduct, which helps us to manage the impact of a project lifecycle in a holistic manner. In 2016-17, a total expenditure of about ₹ 0.13 billion was incurred on environmental pollution control and management measures.

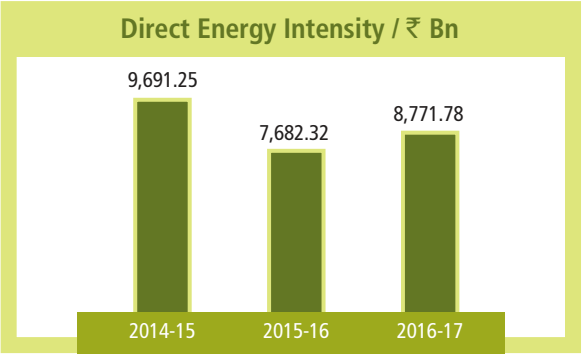
Key Environment Performance Highlights 2016-17

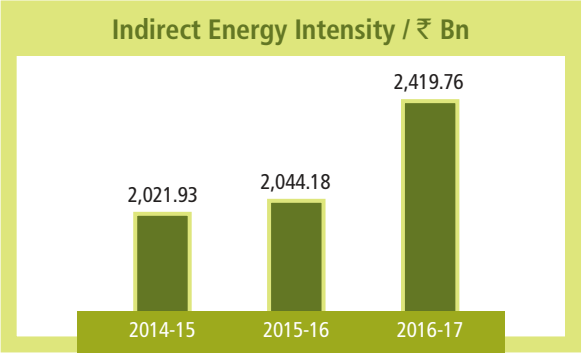
Water Positive	Energy Conservation	Renewable Energy	Material Management	Green Buildings	Water Conservation
All our 24 L&T campuses in India are now Water Positive, as a result of our painstaking efforts in achieving 'zero wastewater discharge' and executing rain water harvesting projects at campuses.	More than 82 million units (kWh) of energy has been saved, avoiding over 68,000 tons of CO_2 emissions at our establishments, cumulatively over the last eight years.	34.7 million units (kWh) of renewable energy used in campuses, contributing to more than 7.1% of our electrical energy mix.	26,583 tons of Steel and 488 tons of Zinc, recycled during the last five years.	L&T currently has 16 green buildings and one green factory, covering 2.3 million square feet of green building area within our campuses.	Achieved 11% reduction in specific water consumption (domestic) m^3/ workforce since last year.

Energy

We make conscious and serious attempts to conserve fossil fuels, by increasing our share of renewable energy consumption. A team of dedicated in-house Bureau of Energy Efficiency (BEE) certified energy managers and auditors, helps us manage energy at our manufacturing facilities. We have now initiated energy audits at our major project sites. In 2016-17, the Company's direct energy consumption was 5,988,755 GJ and indirect energy consumption was 1,652,040 GJ. Our energy consumption outside the organization covering transport facilities provided to the employees is 227,870 GJ.

This year, our direct energy consumption increased by 14% and indirect energy consumption increased by 18.38% w.r.t. to last year, due to increased activity at our project sites and the cyclic nature of the project business. Our major business is Engineering, Procurement and Construction (EPC) of projects, where energy consumption is related to the stage of project execution. We will continue to adopt recommended measures to manage energy across campuses and project sites.





Note: The values for 2014-15 and 2015-16 are restated after excluding L&T Infotech operations, which is not part of the scope of the report, from this year onwards. Since this year, as per our new Sustainability Roadmap 2021, we have started reporting energy intensity per turnover instead of intensity/employee.

Renewable Energy

It is our constant endeavour to increase the share of renewable energy in our overall energy mix. We generate energy from renewable sources at 18 campuses. Four of our campuses source wind energy, and one campus started procuring solar energy this year.

60 MWp Solar Tracker Plant at Tiruchuli, Tamil Nadu

L&T's RENEWABLE ENERGY CONSUMPTION

WIND

Our campuses utilize 33 million units of electricity supplied by wind powered turbines.

SOLAR

Solar energy equivalent to one million units is harnessed on L&T campuses.

BIO-GAS

The food waste processing plants at four campuses contribute to more than 7,465 m^3 of biogas, which is used as fuel in canteens.

GRI 302-1, GRI 302-2, GRI 302-3

CASE STUDY

Water positive campuses

Giving water back to nature with our conservation methods

We believe that water is a critical resource which should be preserved. We contribute to the cause, with our sustainable water management solutions. To effectively manage its water footprint, L&T undertook initiatives like creating zero wastewater discharge campuses, water conservation, recharging underground aquifers through rain water harvesting, community watershed programmes, and water footprint assessment.

State-of-the-art wastewater treatment systems have been installed at all our campuses and treated wastewater is re-used within the campuses for gardening, toilet flushing and cooling tower applications; thereby reducing fresh water consumption. Water storage structures like check dams, ponds and anicuts are built by the Company for the communities around its facilities. The subsequent increase in water storage and ground water recharge, helped communities gain improved access to water for drinking and agriculture.

All 24 L&T Campuses across India achieved Water Positive Status in 2016.

Keeping tabs on water consumption

We account for the water footprint of the Company with water credit and debit calculations. Water debit is calculated as the fresh water consumed by the campuses and water credits include rain water harvested, water stored in check dams, water recycled and reused. The Water Positive status is conferred upon a manufacturing location, only when the amount of water withdrawn for industrial usage, is less than the amount of water given back to society and nature.

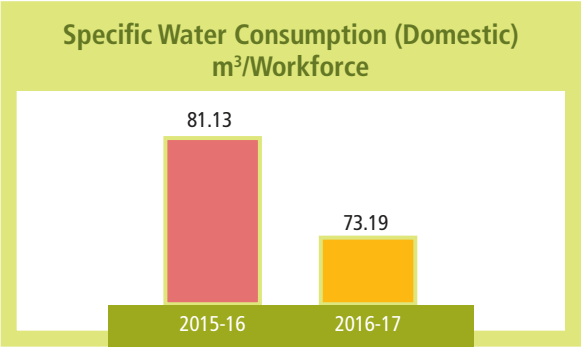
The water harvesting structures developed by L&T in Maharashtra, Madhya Pradesh, Tamil Nadu and Rajasthan, have accumulated more than 2,400 million litres annually. L&T also harvested 408 million litres of water at its various establishments. This brings the total water credit (returned to society and nature) to 4,125 million litres, whereas the water utilized or water debit was at 3,900 million litres. Water positivity of manufacturing campuses was affirmed on the principles of completeness, reliability and accuracy by DNV GL Business Assurance India Pvt. Ltd. – an independent certification agency.

Water positivity of all L&T campuses is a key initiative taken in L&T's Sustainability Roadmap 2021. The water positive status reaffirms the Company's commitment and rigour towards water efficiency as part of its corporate sustainability programme.

Check Dam Constructed at Maharashtra

Water

We have installed water conservation-related infrastructure and make efforts to sensitize our employees towards conserving water on a regular basis. We employ better technologies, recycle and reuse water to minimize freshwater consumption. We also organize initiatives that build a habit of consuming less water, diligently. Our efforts have paid off significantly, as we have been able to consistently curtail the amount of water withdrawn, and all our 24 campuses have turned 'water positive', along with adopting a 'zero wastewater discharge' approach. This is a result of our painstaking efforts towards constructing water storage structures, rain water harvesting facilities and ensuring no wastewater is discharged outside campuses.



8.71% of the total fresh water consumed at our campuses and project sites is reused/recycled.

Water Consumption (m³/year)

Source of Water	2014-15	2015-16	2016-17
River/Lake	2,658,487	2,641,888	2,729,343
Municipal water	2,043,298	1,362,496	1,300,086
Rain water	71,694	80,602	411,313
Ground water	509,279	2,913,517	2,395,844
Others	4,417,321	1,632,036	2,498,674
Total	**9,700,080**	**8,630,539**	**9,335,260**

The total wastewater discharge is 652,776 m³. Our wastewater discharge does not significantly impact any water body, protected area or area of high biodiversity value.
Note: The figures are restated after excluding L&T Infotech operations, which is not part of the scope of the report, from this year onwards.

Campaign for water conservation

L&T's Water & Effluent Treatment business at Bhatpara site kicked off a water conservation campaign with the Bhatpara Municipality, Jagaddal Police Station and Local Panghat Club. The team conducted awareness sessions on the value of water and encouraged locals in the area to use water efficiently. The municipality had installed drinking water taps for the locals, but some of them were either stolen or damaged, leading to wastage. The Company repaired the existing taps and saved up to 3,800 litres of water per day.

CASE STUDY

Soil for water – a winner all round

Soil sourced from farms ensure water storage for farmers

L&T is constructing a 95-kilometer railway line in Vidisha District, Madhya Pradesh. This project includes railway track laying with signal systems. The project uses blanketing soil to lay tracks. The area around it, had a considerable overburden and limited amount of good soil as the ground hits hard rock, five to six meters below the ground level.

The Company had a choice to either purchase soil from areas close-by or from a distant location which adds to the transportation costs. If they were to use soil from the vicinity, it meant additional procurement efforts as it had to be gathered from many farms. The land owners in the area are farmers with large farmlands. Yet, they lacked water all year round, and had no access to rivers or canals to cater to farmland requirements.

The only available source of water was the monsoon showers. Monsoons brought in a good amount of rainfall, yet the water could not be stored and used for agriculture. This situation restricted income from farming as it could only support one crop a year, and that too crops like Chana which do not require large amounts of water.

L&T held a series of stakeholder consultations to understand the situation and needs of farmers. It then joined hands with villagers to take soil from the vicinity, thereby creating a win-win situation for both parties. The soil collection process created large mine pits, which could be converted into water storage reservoirs. This move helped integrate sustainability with business as the Company got soil at fair-value, and farmers received good value and reservoirs, which they could not have created by themselves.

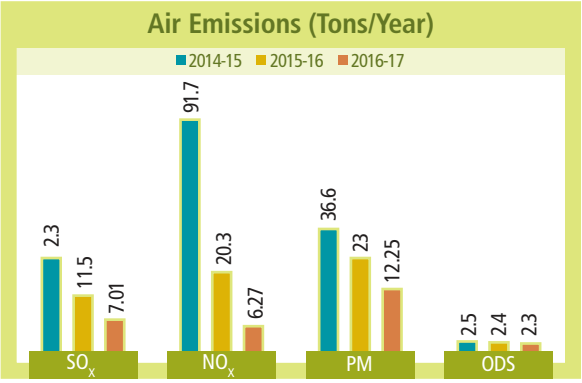
Result

The intervention led to storage of rainwater in reservoirs, which is now used for growing crops like wheat and rice. These reservoirs are part of individual farmlands and water is directly pumped for irrigation. The soil is fertile and hence India's best quality wheat is now cultivated in the region. The area now harvests up to two crops a year, improving its prosperity. More than 39 reservoirs were created, which are filled once a year holding more than 1,159 million liters of water. This transformed the lives of villagers, making it a defining case of bringing sustainability into their business.

Rain Water Storage Structures

Air Emission

We monitor air emission at our campuses and project sites, and take necessary measures to control them efficiently. Our monitoring systems ensure that all our emission are within the permissible regulatory limits. In line with applicable regulations, we have phased out the use of Ozone Depleting Substances (ODS). We could reduce our emissions in 2016-17 due to the increased use of alternate sources of energy via reliable power purchase agreements. This helped us cut down the use of DG sets which were the principle source of air emissions.



Note: The ODS consumption is majorly due to the use of refrigerants in air conditioners and chilling plants.

GHG Emissions

Scope 1

Direct GHG emissions 434,802 tons of CO_2

Scope 2

Indirect GHG emissions 349,206 tons of CO_2

Scope 3

Other indirect GHG emissions 3343883 tons of CO_2

At L&T, we believe that the industry can play a key role in climate change mitigation and we recognize our responsibility towards reducing our Greenhouse Gas (GHG) emissions. We manage our emissions at our facilities through the dual strategy of reducing energy consumption, and utilizing renewable energy sources. The source of GHG emissions in our operations are:

Scope 1 emissions

Consumption of fuels like petrol, high speed diesel, furnace oil, natural gas, LPG, CNG and acetylene.

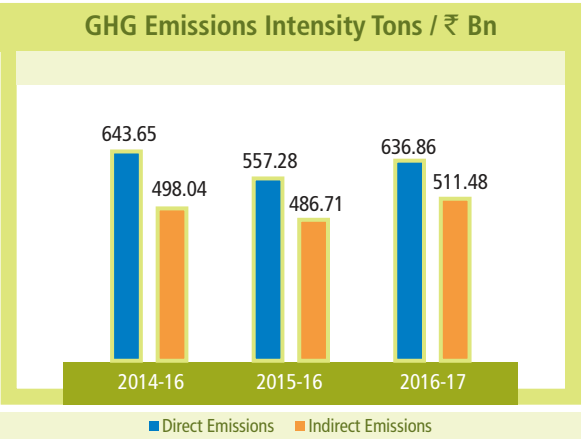
Note: The energy, GHG emissions and water consumption intensity per employee have been derived as per the Scope of Reporting [Refer Section - About the Report] Calculation methodologies are as per ISO 14064-1 standard and the global warming potential used in these calculations is taken from IPCC and WBCSD GHG protocol.

Scope 2 emissions

Utilization of grid electricity supplied by state electricity supply boards.

Scope 3 emissions

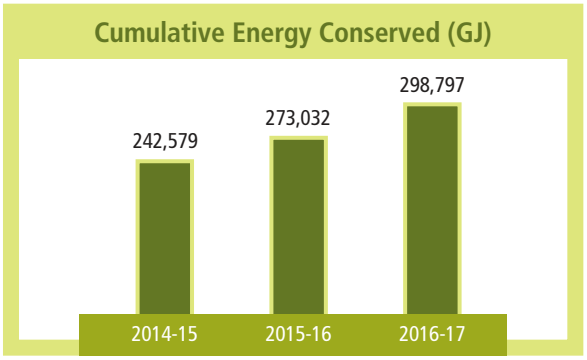
Business travel, employee commuting provided by the organization and waste generation in operations. We are also capturing a part of the Scope 3 emissions from upstream and downstream transportation, emissions from purchased goods and services. We are expanding the inventory of scope 3 emission to make the data more inclusive. Emissions from leased assets (upstream) and investments are included in the Company's Scope 1 and Scope 2 emissions. Initiatives such as technology change, switching to renewable energy and improving energy efficiency are enabling us to reduce our Scope 1 and Scope 2 GHG emissions.



GRI 305-1, GRI 305-2, GRI 305-3, GRI 305-6, GRI 305-7

Energy Conservation

The Company places an enormous emphasis on energy conservation. In the last eight years, we saved more than 82 million units (kWh) of energy, avoiding over 68,000 tons of CO_2 emission at our establishments.



Note: The figures are restated after excluding L&T Infotech operations, which is not a part of the scope of the report, from this year onwards.

Interventions	Energy savings GJ/Year
Process redesign	13,979
Optimization and operational control efficiency	133
Conversion and retrofitting of equipment	8,823
Change to CFL and LED lamps	1,944
Change in personal behaviour and auto-shutting of lights when not in use	886
Total energy conserved	**25,765**

Major Energy Conservation Measures

Installation of Blower for Pre-treatment agitation in Electrical and Automation business – Coimbatore campus, led to saving of 12,000 units.

Savings of 18,000 units by installation of VRV system to meet the varying requirements of the Admin Building at Electrical & Automation business – Coimbatore campus.

Savings of 13,500 units by reduction in AC load by installation of switch dampers with occupancy-based controls in conference rooms, meeting rooms, etc., at Electrical and Automation business – Coimbatore campus.

Savings of 50,000 units by proper operation and maintenance of Chillers in Precision Machining Centre, Heavy Engineering Business – Coimbatore campus.

Savings of 40,000 units by trimming of chilled water pump impeller diameter and temperature-based ON-OFF controlling of AHU chilled Water at Precision Machining Centre, Heavy Engineering Business – Coimbatore campus.

Savings of 84,000 units by installation of motorised fresh air damper for controlling fresh air in AHUs at Heavy Engineering – Coimbatore campus.

Savings of 33,000 units by replacement of plant luminaries (54 W X 6FTLs) with MH luminaries / Induction Lamps / LED luminaries in Precision Manufacturing Facility, Heavy Engineering Business – Coimbatore campus.

Installation of transparent roofing in plant sheds for utilization of day light in Precision Manufacturing Facility, Heavy Engineering Business – Coimbatore campus.

Installed breaker at 400 tons gantry crane and saved energy and diesel cost, with savings of 34920 Litres of Diesel at Heavy Engineering Business – Hazira campus.

Replacement of 36W light fittings with 18W LED in Heavy Engineering Business – Hazira campus led to savings of 25,661 units.

Installation of 135W LED overhead lights led to savings of 280,502 units at Heavy Engineering Business – Hazira campus.

Coolant system was upgraded in Asquith machine at Heavy Engineering Business – Hazira campus saving 123,780 units.

Waste and Spills

At L&T, we have recognized effective waste management as a key part of environment management. We reduce, reuse and recycle waste generated at our project sites to cut down our environmental impact and Carbon footprint. We have measures in place to eliminate and contain spills and regularly report on waste and spills as part of ISO 14001 and OHSAS 18001 compliance. At L&T, we conduct periodic assessments internally and also with third party auditors, to ensure compliance with applicable regulations.

Waste Generated (Tons)	2016-17
Hazardous waste and waste oil	6,134
Non-hazardous waste	42,452

Highlights of our waste management strategies:

Transport and Disposal

Hazardous waste like used oil, oil-soaked cotton waste, used chemical / paint / oil containers, batteries, paint residues and ETP sludge is disposed through government-approved recyclers / re-refiners / re-processors.

Hazardous waste is transported as per the statutory requirements.

Electronic waste (e-waste) is disposed through authorized vendors as per the statutory requirements.

Biomedical waste generated at dispensaries and health centres is disposed as per statutory requirement and responsible disposal is ensured.

The Company does not import, export, transport or treat any hazardous waste covered under the Basel Convention.

Waste-to-worth

The Company has invested in reducing, recycling and reusing waste generated at its campuses. The waste from the canteens is treated either in a biogas plant or at organic waste composters at L&T campuses in Ahmednagar, Bengaluru, Chennai, Hazira, Knowledge City (Vadodara) Leadership Development Academy (Lonavala), Mahape, Mysore, and Powai. The biogas generated is put to good use by using it as a fuel for cooking, and the manure produced is utilized for gardening.

Apart from this, our project sites take specific initiatives to reuse waste material. Pre-cast slabs are used for concreting, instead of discarding them. Their applications include creating walkways, material stacking, internal approach roads and more.

Turning scrap into storage systems

L&T's Water & Effluent Treatment business at IT City, Mohali site started using scrap to stack material in the store area.

Sluice valves boxes are used for stacking of pipe fittings

Scrap HDPE pipes are used for stacking nuts and bolts

Cable drum wood is used for making partition walls in stores

Cable drum wood is used for making a bench to display the PPE

Producing eco-friendly flyash bricks for use at site

L&T's Water & Effluent Treatment business recycled waste flyash into bricks at its project site at IT City, Mohali. Over 0.7 million fly ash bricks were produced on site, through an eco-friendly process that does not require coal. The bricks were used to construct electrical chambers, foundations and gully chambers.

Biodiversity

Our facilities are located in notified industrial areas. No species listed in the International Union for Conservation of Nature (IUCN) Red List and National Conservation List was found to exist at our campuses. More than 150,000 trees are nurtured at L&T campuses. This year, we have planted more than 295,000 trees at our campuses and project sites. A tree inventory portal is set up by the Company to monitor the number of trees planted across campuses and project sites, on a quarterly basis.

It is our constant endeavour to increase the tree cover and create natural carbon sinks. At L&T events and functions, guests are welcomed with Tree Certificates instead of floral bouquets. A sapling is planted and maintained, on behalf of the guest, as per the certificate. A guidance document on scientific methods of tree plantation and maintenance, has been made available across campuses and project sites.

Compliance

All our campuses and project sites have taken the necessary approvals from local authorities before commencing operations. Compliance with respect to various statutes, rules and regulations applicable to L&T, is ensured. There is a 'system compliance report' which is reviewed at all units and regional offices, and submitted to the corporate secretarial department on a quarterly basis. During the year, there were no incidences of non-compliance, and no fines were imposed within the reporting period on L&T campuses.

Waste to worth

At Darlipali in Odisha, L&T Power recycles waste concrete cubes to prepare the foundation of testing machines, boundary walls, material stacking at fabrication yard, and more. The site cast 7,000 sets with six cubes each as per the contract, which are rendered as waste after compression testing. This initiative eliminated wastage and met infrastructure needs without added environmental or financial impact.

Material Management

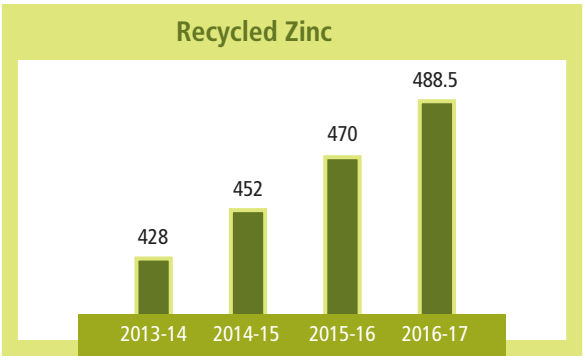
L&T has instituted several resource-saving initiatives at its campuses. We promote the use of alternative materials such as fly ash and crushed sand in our Construction business. As most of our products are Engineered To Order (ETO), and most customer specifications insist on virgin material, the scope of using recycled material is limited. We continue to recycle Steel and Zinc in our operations.

Tons

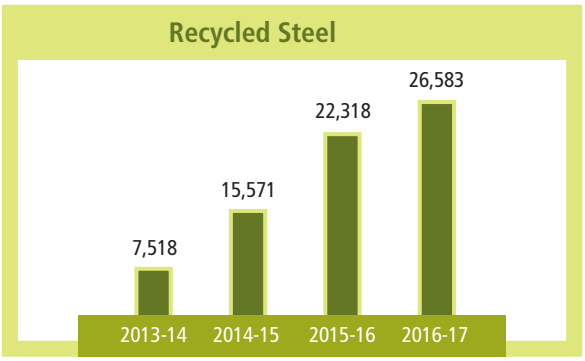
Materials (partially reported)	2016-17
Ferrous	1,098,446
Non-ferrous	9,134
Hazardous chemicals	74,333
Oils and lubricants	1,575
Hazardous gases	10,488
Packaging material	5,081
Cement and sand	6,657,566

Recycled Input Materials (Cumulative)

Tons

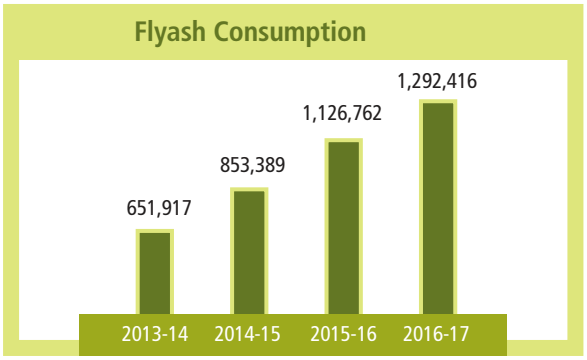


Tons

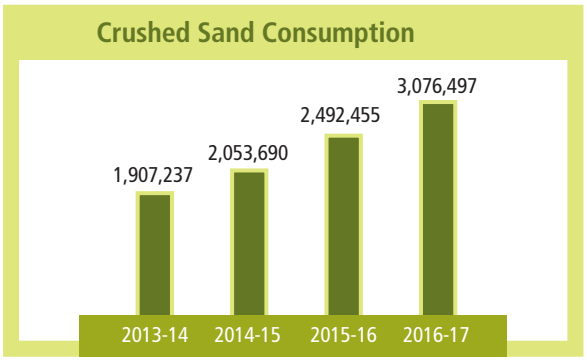


Cumulative Alternative Materials Used

Tons



Tons



packaging materials

Packaging Materials

Most of our products are 'engineered to order' heavy equipment, which do not require packaging. Wherever packaging is required for distribution, we use green packaging materials and ensure that minimum packaging material is consumed. Given the nature of our business, it is not feasible to reclaim or recycle packaging material used for our products.

Effective use of rundown water

Hand pumps are a primary source of drinking water, but have many disadvantages, including wastage. Traditionally, workmen at sites use it to wash their hands and themselves, before they drink water, resulting in a lot of water rundown and waterlogging.

A water storage tank of 30 m^3 capacity was constructed with waste concrete (6.8 m^3) near a hand pump with a slope provided towards the tank. As people use the water at the pump, the rundown water is collected in the tank. This water is then reused for curing of fresh concrete and cover blocks, and for settling dust through sprinkling. Over and above water conservation, the initiative also ensured that the areas near hand pumps remained free of collected water, and saved manpower needed to clear waterlogging.

Cement collectors improve air quality and health

At our power project sites, ground mounted cement collectors are used to collect cement, reduce pollution and improve air quality. Cement collectors are installed at batching plants to separate cement particles that flow out, using filtering elements made of fabric polyester. As the dusty air flows through the cement collector and the filter, it separates cement particles. The cement accumulated on the filter elements' surface is periodically removed by reverse air jet cleaning system with compressed air. It facilitates cement collection, while moderating risk in maintenance, apart from being a cost-effective solution.

These centralized ground mounted cement collector units help protect workforce and society from exposure to cement particles, reducing associated health issues. It also helps recover cement, reduce wastage, and enhance improve air quality.

We have installed ground mounted cement collectors at nine power project sites for 17 Batching plants which collect, on an average, one percent of cement fed to the silos.

Cement Collector

Green Buildings

L&T currently has 16 green buildings and one green factory, covering 2.3 million square feet of green building area within our campuses. A few of these are shown below.

Green Buildings on L&T Campuses

Technology Block, Hazira

Administrative Building, Kattupalli

Office Complex, Talegaon

SBU Block (2nd floor), Hazira

Administrative Building, LTSSHF, Hazira

Office building, Coimbatore

Office Complex, Ahmednagar

Unnati building at C&A Mahape (Navi Mumbai)

Knowledge City, Vadodara

North Block II, Mumbai

Learning Centre - LDA, Lonavala

Green Factory, Vadodara

EDRC, Chennai

L&T TC III, Chennai

Administrative Building, Vadodara

L&T TC II, Chennai