Sustainability Report 2018-19

Sustainability is a fundamental principle and practice at Brigade. Sustainable development is one of the core values of Brigade and is driven by the top management to deliver environment friendly projects to our clients and investors.

Traditionally, human settlements have developed in mixed-use patterns. However, with industrialisation as well as the invention of the skyscraper, governmental zoning regulations were introduced to separate different functions, such as manufacturing, from residential areas. But since the 1990s, mixed-use zoning has once again become desirable as the benefits are recognised.

The Features of Mixed-uses

Outdoor Space
Mixed-use development allows the creation of plazas and outdoor corridors between buildings and sidewalks. Street facing facades have a maximum setback to how much space is allocated for pedestrians to gather in. Landscaping another feature in outdoor spaces allow trees and plants to grow on buildings vertically rather than being faced out in a front row.

Public Infrastructure
Mixed-use in centers that have increased in population density has allowed people to access places through public transit and has helped encourage walking, biking, and cycling to places of work and errands. Transportation has played a role in mitigating climate change by reducing congestion on roads and building up freight movement for goods and services. With street-level design Mixed-uses allowed the designs of pedestrian walkways, plazas, and eye distances to shops and workplaces. This in turn has reduced parking lots in alleyways and garages.

Mixed-use development or often simply Live-work space is a type of urban development strategy for living spaces (housing) that blends residential, commercial, cultural, institutional, or entertainment uses, where those functions are physically and functionally integrated, and that provides pedestrian connections. The concept of new urbanism and walk-to-work is gaining momentum in major cities.

Brigade Group are pioneers in developing Mixed Use Developments especially in Bengaluru since 2004 with its projects Brigade Millennium and Brigade Gardenia, Brigade Group introduced Bengaluru to Mixed Use Developments comprising of Residences, Clubhouse, School, Convention Centre, Auditorium, Music Experience Museum and various other amenities. Subsequently, Brigade Group has developed Brigade Metropolis, Brigade Gateway, Brigade Meadows, Brigade Orchards and Brigade Golden Triangle comprising Residences, Mall, Hotel, School, Hospital, Clubhouse and Office complex all in same campus.

With the success of the completed projects, Brigade has raised the bar and have added various new age amenities viz., Bachelor accommodation, Shared residences, Co-working space, etc.

Brigade Metropolis
- Site Area: 36 Acres
- Comprising of 1,500+ Residences
- Office Space for about 7,500 people with Food court
- Convenience Shopping with Restaurants, etc.

Brigade Gateway
- Site Area: 40 Acres
- Comprising of 1,200+ Residences
- Office Space for about 12,500 people with Food court
- Mall with Multiplex, Food court, Restaurants, Star Hotel, School, Hospital, Club House, Man Made Lake, etc.

Brigade Golden Triangle
- Site Area: 20 Acres
- Comprising of 650+ Residences
- Office Space for about 5,000 people with Food court (Brigade Signature Towers)
- Mall with Multiplex (Orion Uptown), Food court, Restaurants, Star Hotel (Holiday Inn Express), Club House, etc.

Brigade Meadows
- Site Area: 60 Acres
- Comprising of 3,000+ Residences
- Club House
- Convenience Shopping with Restaurants

Brigade Orchards
- Site Area: 130 Acres
- Comprising of 4,000+ Residences (including assisted living, villas and apartments)
- Club House with Rooms, Indoor and Outdoor Sports, Serviced residence
- Convenience Shopping with Restaurants, Cinema, School, Man made lakes, etc.
Some of the mixed-use scenarios Brigade is designing the property developments are:

- **Main Street residential/commercial** – two to three-story buildings with residential units above and commercial units on the ground floor facing the street
- **Urban residential/commercial** – multi-story residential buildings with commercial and civic uses on ground floor
- **Office convenience** – office buildings with small retail and service uses oriented to the office workers
- **Office/residential** – multi-family residential units within office building(s)
- **Shopping mall conversion** – residential and/or office units added (adjacent) to an existing standalone shopping mall
- **Live/work** – residents can operate small businesses on the ground floor of the building where they live
- **Hotel/residence** – mix hotel space and high-end multi-family residential
- **Parking structure** with ground-floor retail
- **Single-family detached** home district with standalone shopping center

- **Brigade Cornerstone Utopia**
  - Site Area: 47 Acres
  - Comprising of 4,200+ Residences and Club House
  - Office Space for about 7,500 people with Food court
  - Mall with Multiplex, Retail Shopping, Convenience shopping, Restaurants, Sports and recreation centre, etc.

- **Brigade El Dorado**
  - Site Area: 50 Acres
  - Comprising of 6,000+ Residences with Community Centre
  - Office Space for about 1,500 people with Food court
  - Convenience store, Sports and recreation centre, etc.

- **Brigade Xanadu, Chennai**

- **WTC Residences & WTC, Chennai**
  - Site Area: 15 Acres
  - Comprising of 400+ Residences and Club House
  - Office Space for about 25,000 people with Food court (World Trade Centre, Chennai)

- **WTC Residences, Chennai**
  - Site Area: 36 Acres
  - Comprising of 1,500+ Residences
  - Club House
  - Convenience Shopping, etc.

Under Construction Integrated Township Projects
Benefits of Townships:

Efficient Land Use: In today's scenario, development has become synonymous with physical expansion or growth. There is a need for significant changes in the pattern of land use and construction that will provide communities with better quality of life and at the same time conserve natural resources. Townships reduces the impacts of urban sprawl by encouraging compact, mixed-use developments and promotes higher urban densities and improving quality of life.

Habitat Preservation & Restoration: Conventional development is generally insensitive to natural environment. Such developments may scar the landscape, take prime agricultural land out of production or destroy biodiversity and natural habitats.

The Townships system is designed to facilitate restoration and preservation of the natural environment by encouraging strategies that aid interface between the built environment and natural environment. This approach will not only enhance the fabric of the planned development but also provide environments conducive for living and working.

Efficient Transportation Management: Traffic congestion, long distance commuting, rising levels of air and noise pollution are pressing issues in today's cities. Efforts to relieve congestion such as, constructing flyovers, road widening etc., are good initiatives but may not address issues such as fossil fuel consumption and associated emissions.

‘Townships’ addresses these issues by encouraging effective and efficient transportation management strategies. Such strategies include increasing opportunities for bicycling, encouraging pedestrian friendly network, reduction in the number of automobile trips, promoting public transportation and use of alternative vehicles.

Other Common Sustainability systems followed in all projects of Brigade Group

- Green Building Certification for all commercial office buildings
- Transplantation of existing trees at the project sites
- Purchase of power from Green Power generators viz., Wind, Solar, Geothermal, etc.
- Optimum use of energy using natural insulation designs – use of daylight and solar cells
- Use of high efficiency Light Emitting Diode (LED) Lighting systems
- Building Orientation and Cross Ventilation to optimise Air Conditioning systems and loads
- Bureau of Energy Efficiency (BEE) rated and Green Pro Certified products are used to the maximum extent possible
- Providing Personal Protective Equipment (PPE) to construction workers and ensuring their use
- Monthly Helmet of Honour awards are formulated at all Brigade projects to encourage use of PPEs, maintain hygienic conditions at project site and workers camp, providing water and sanitary facilities, etc.
- Landscape with local / native plants and tree species are adopted
- Conservation and reuse of top 20cm – 50cm of fertile excavated earth for landscape purpose
- Use of STP treated water from Brigade's operational projects for construction activity viz., Concrete mixing, Curing, water sprinkling for dust suppression, etc.
- Use of low flow water fixtures to reduce the use of fresh water by 20-40%
- Rooftop Rainwater Harvesting (Storage of rainwater in underground sump and used for domestic purposes). The Rainwater harvesting systems are efficiently designed for peak rainfall as against average rainfall indicated in norms.
- Storm water management and Harvesting are through infiltration wells, manmade Ponds, swales, etc.
- Treatment and reuse of 100% sewage effluent generated within the developments
- Reuse of Sewage Treatment Plant (STP) treated water for Toilet Flushing, Landscaping and make-up water for Water-Cooled Air-Conditioning systems. 80-100% of the treated water is recycled for above secondary purposes
- Construction materials Viz., Cement, Steel, Gravel, Sand, etc. are procured from local manufactures to reduce the emissions due to transportation
- Installation of photovoltaic (PV) cell for power generation
- Installation of Solar Water Heaters to maximum extent possible
- Regular monitoring and regulation of Ambient Air Quality and Noise levels during construction stage
- Providing and maintaining drinking water and sanitary facilities to construction workers along with provisions for temporary housing upto completion of construction.
- Reuse of construction debris for backfilling and leveling. This is to ensure that the construction debris do not end-up in Landfill sites. The construction waste is segregated at source into recyclable and nonrecyclable waste. The recyclable waste viz., Steel, Glass, Aluminum, Plastic, metal alloys, etc. are sold to local recyclers.
- Periodic upkeeping of construction equipment and vehicles
• Use of performance glass for facade of the buildings to optimise the use of daylighting and at the same time does not increase the Air conditioning energy demand.

• Covering loose construction materials with Tarpaulin / plastic sheets to reduce dust emissions from the project

• Installing Firefighting and Public Address systems in compliance with NBC – 2016

• Use of Volatile organic compounds (VOCs) Paints, Sealants, adhesives in all projects

• Minimise the use of Wood during construction stage by adopting Aluminum Shuttering and Precast construction technology

• Municipal Organic Solid Waste is converted to compost within the project site

• The Municipal Inorganic solid waste is segregated at source and sold to local recyclers

• The Hazardous waste / used Oil from the Diesel Generator (DG) Sets is stored under closed roof and leak proof barrels before it is disposed to authorised oil reprocessors

• Providing piped Compressed Natural Gas (CNG) connection instead of Liquefied Petroleum Gas (LPG) to individual kitchen in residential projects

• Construction materials containing recycled content viz., Fly Ash, Ground granulated blast-furnace slag, engineered wood, steel, aluminum, glass, etc are used to conserve natural resources

• Use of low embodied construction materials

• Making use of daylight to illuminate interiors; use of natural ventilation.

Green Building Certification for Brigade Projects

Buildings have extensive direct and indirect impacts on the environment. During their construction, occupancy, renovation, repurposing, and demolition, buildings use energy, water, and raw materials, generate waste, and emit potentially harmful atmospheric emissions. These facts have prompted the creation of green building standards, certifications, and rating systems aimed at mitigating the impact of buildings on the natural environment through sustainable design.

The push toward sustainable design increased with the launch in 1990 of Building Research Establishment’s Environmental Assessment Method (BREEAM), the first green building rating system in the world. In 2000, the U.S. Green Building Council (USGBC) followed suit and developed and released criteria aimed at improving the environmental performance of buildings through its Leadership in Energy and Environmental Design (LEED) rating system for new construction. The Indian Green Building Council (IGBC), part of the Confederation of Indian Industry (CII) was formed in the year 2001.

The management of Brigade Group have decided to get all the commercial buildings Green Building Certified and to continuously raise the benchmark of sustainability.

The green building concepts are adopted in all projects of Brigade Group; however, the certification is obtained only for office buildings. Below concepts of Green Building are adopted.

• Efficiently using energy, water, and other resources
• Protecting health and improving quality of life
• Reducing waste, pollution and environmental degradation
• Optimise Material use

<table>
<thead>
<tr>
<th>Sl. No.</th>
<th>Project Name</th>
<th>Size of Office buildings in Sq.m.</th>
<th>Green Building System / Aimed Rating</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Brigade Tech Gardens (Zone B and Zone C)</td>
<td>2,50,000</td>
<td>LEED USGBC – Platinum</td>
</tr>
<tr>
<td>2</td>
<td>World Trade Centre, Chennai</td>
<td>1,85,000</td>
<td>LEED IGBC – Gold IGBC – Platinum</td>
</tr>
<tr>
<td>3</td>
<td>World Trade Centre, Kochi</td>
<td>65,000</td>
<td>LEED India IGBC – Gold</td>
</tr>
<tr>
<td>4</td>
<td>Brigade IRV Centre</td>
<td>32,500</td>
<td>LEED India IGBC – Gold</td>
</tr>
<tr>
<td>5</td>
<td>Brigade Senate 1</td>
<td>45,000</td>
<td>IGBC – Gold</td>
</tr>
<tr>
<td>6</td>
<td>Brigade Senate 2</td>
<td>40,000</td>
<td>IGBC – Gold</td>
</tr>
<tr>
<td>7</td>
<td>Brigade Deccan Heights</td>
<td>38,000</td>
<td>IGBC – Gold</td>
</tr>
<tr>
<td>8</td>
<td>Brigade Twin Towers</td>
<td>1,50,000</td>
<td>IGBC – Platinum</td>
</tr>
<tr>
<td>9</td>
<td>Brigade Triumph</td>
<td>35,000</td>
<td>IGBC – Gold</td>
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<tr>
<td>10</td>
<td>Ibis Style, GIFT City</td>
<td>20,000</td>
<td>IGBC – Gold</td>
</tr>
<tr>
<td>11</td>
<td>Brigade World Trade Centre Annex</td>
<td>15,000</td>
<td>IGBC – Gold</td>
</tr>
<tr>
<td>12</td>
<td>Brigade Utopia (Office Buildings)</td>
<td>60,000</td>
<td>IGBC – Gold</td>
</tr>
<tr>
<td>Project</td>
<td>Size of the Project</td>
<td>Features</td>
<td></td>
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<td>-------------------------------</td>
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<td>--------------------------------------------------------------------------</td>
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<tr>
<td>Brigade Bhuwalka Icon — LEED India Gold</td>
<td>60,000 Sq.m</td>
<td>Electric Charging Points, Water efficient fixtures, 100% reuse of STP treated water</td>
<td></td>
</tr>
<tr>
<td>Nalapad Brigade Centre—LEED India Gold</td>
<td>65,000 Sq.m</td>
<td>Close proximity to public Transport and required amenities, 60% reduction in water demand, 50% reduction in energy cost, 90% of construction debris reused for site leveling and backfilling, Construction material with 14% of recycle content, Municipal Solid Waste Management</td>
<td></td>
</tr>
<tr>
<td>Brigade Magnum — LEED India Gold</td>
<td>68,000 Sq.m</td>
<td>Use of High performance glass to optimise the use of daylighting and reduce the energy load for Air Conditioning, Reduction in annual energy cost by 15%, Use of Regional material within 400Km to an extent of 63% of construction materials, Differently abled persons friendly design</td>
<td></td>
</tr>
<tr>
<td>Brigade Signature Tower—IGBC Gold</td>
<td>85,000 Sq.m</td>
<td>Demonstration of Passive Architecture, Soil erosion control and rainwater management during construction, Native/Adaptive and Drought tolerant Landscaping, Demonstrated Preservation / Transplantation of Trees, Outdoor Light Pollution Reduction, Basic Facilities for Construction Workforce, Use of Green Pro Construction Materials</td>
<td></td>
</tr>
<tr>
<td>Brigade Opus— IGBC—Platinum</td>
<td>35,000 Sq.m</td>
<td>Installation of 70KW PV Cells, Green Wall on one of the building facade, Heat Island Reduction —96% of the Roof is covered with roof garden and PV Cells, Purchase of Green Power (Off-site Renewable Energy), 21% energy cost savings over the baseline, 98% of the construction debris are diverted from landfills sites, Use of entryway mats and MERV 13 filtration to reduce indoor air pollution</td>
<td></td>
</tr>
<tr>
<td>Brigade International Financial Centre, GIFT City - IGBC Silver</td>
<td>35,000 Sq.m</td>
<td>2.27% of energy saving is achieved by design of passive architecture features, 43% reduction on water demand, 64% of the total building materials by cost manufactured locally within a distance of 400 km, 96.5% of the construction debris are diverted from landfills sites, Use of Green Pro Construction Materials</td>
<td></td>
</tr>
</tbody>
</table>

Green Building Certified Projects of Brigade Group with Salient Features
Brigade Opus, a 3.5 lakh sqft., ready for fit-outs modern day workplace is designed to offer a sustainable and efficient work environment. Strategically located in Hebbal, opposite Brigade Magnum, it offers quick connectivity to the city centre and the International Airport.

A Slice of Nature Amidst all the Glass

Brigade Opus, a IGBC Platinum Certified project offers a self-sufficient green wall which not only enhances visual appeal but also improves air quality and keeps the interiors of the office cool leaving all its occupants feeling positive and refreshed. This spectacular feature is India’s largest living biowall which houses 7 different species of plants totalling 15,487 of them in the biowall modules and is well maintained by an automated irrigation sprinkler system. Green walls create alluring environments. They improve health, naturally filter the air inside the building and enhance building visuals. A work of art by itself, this sustainable design has been engineered in order to ensure recycling, rainwater harvesting and minimum wastage of water.

Adding to the green initiative, the property also has a stunning terrace garden for one to revive and refresh their spirits during the course of their day.

An environmentally responsible approach and the combination of green features make this property your ideal office destination.

Comfortable Work Environments to Enhance Productivity

Sustainable and classy with a modern take on highly productive work environments, Brigade Opus unmistakably catches the eye of its beholder. Located in the heart of the city, Hebbal, opposite Brigade Magnum is the latest icon, Brigade Opus stands tall and elegant. With a focus to enhance business performance, this project has been skillfully designed to enable growth, business potential, and creativity while giving you a premium and world class experience.

This plan brings together a blend of finely tuned landscaped space, aesthetic architecture, and top-class amenities to suit your business needs and to make one feel at ease leading to better innovation and collaboration.

Centralised and Strategically Located in the Heart of the City

Located amidst various industry giants, Brigade Opus offers more than just an office space rather convenience and easy access to its members contributing largely towards making your work life easier. Here’s how -

It offers hassle-free connectivity to other areas across Bengaluru, located on International Airport Road with close proximity to various social settings. Easy access to Hospitals, Schools, Malls and the closest scenic beauty, Hebbal Lake which is sure to leave you mesmerised.

While all the new projects of the company are being designed and constructed to meet the norms of future, the existing projects too are getting upgraded by integrating smart technologies.

About 4 lakh liters of treated water daily is being recycled and is used for cooler tower and the air-conditioning system at Orion Mall thanks to the deployment of an Internet of Things (IoT) based smart technology developed by a startup. Greenvironment Innovation & Marketing India Pvt Ltd, a startup founded by alumni of IIT Madras have installed real-time monitoring of the wastewater plant and troubleshooting support through innovative smart water management — IoT-based technologies

Orion Mall since its inception in 2012 has recycled treated water for air-conditioning, toilet flushing and gardening, it adapted modern technology in 2017, if oil content in water is high, we get an alert immediately, as there are sensors used in different stages of the treatment. Oil in wastewater comes from the food court, which can be treated using an oil skimmer. We can obtain real-time data from the plant anytime. While the process is conventional, the technological intervention has made the quality of recycled water better,
Total Water Management (TWM) at Orion Mall

Smart Technologies Implemented by Greenvironment
- Tanker Monitoring System (TMS)
- Water Treatment Plant (WTP)
- Fresh Water Consumption (FCM)
- Sewage Treatment Plant (STP)
- Reuse Water Consumption (RWC)
- Cooling Tower Automation (CTA)

Cooling Water Savings
Due to high variation in the water quality & quantity in STP, mall was not able to reuse treated sewage for cooling tower make up. Hence, we were forced to run air cooled chiller at a high-power consumption.

<table>
<thead>
<tr>
<th>Air Cooled Chillers</th>
<th>Water Cooled Chillers</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Higher usage of Air-cooled chiller</td>
<td>• 70 KL Fresh Water used for Water cooled chiller</td>
</tr>
<tr>
<td>• For Ikw Air Cooled Chiller- 1.4 KW/ TR</td>
<td>• For Ikw Water Cooled Chiller- 0.8 KW/ TR</td>
</tr>
<tr>
<td>• For 300 TR requirement per day – 420 KW</td>
<td>• For 600 TR requirement per day – 450 KW</td>
</tr>
<tr>
<td>• 10 hours operation per day - 4,200 KWh</td>
<td>• 10 hour operation per day- 2,920 KWh</td>
</tr>
<tr>
<td>• Energy Cost- ₹ 42,000 per day (₹ 10/unit)</td>
<td>• Energy Cost- ₹ 29,200 per day (₹ 10/unit)</td>
</tr>
<tr>
<td>• Water Cost- ₹ 5,250 per day (₹ 75 / KL)</td>
<td>• Water Cost- ₹ 5,250 per day (₹ 75 / KL)</td>
</tr>
</tbody>
</table>

Cooling Tower Automation Oct 2018- 100% Water Cooled Chiller used with Recycled Water from STP
- STP Treated Water supplied – 115 KL per day – ₹ 4,025 / day
- Energy Savings – ₹ 8,000 per day
- Real Time Monitoring & Automation with Greenviornment System
- pH 7.5 to 8.2
- Total Dissolved Solids – 1,500 ppm
- Benefits- Consistent Approach Maintained; Optimum Chemical Usage
Energy Conservation and Use of Renewable Energy Source

- At Orion Mall, Brigade Gateway we have been using renewable energy for the past 4 years. Around 90% of our total power consumption is from renewable source. This has helped us in saving of around 5 million Carbon di oxide equivalent emissions (CO₂e) per year.

- The existing CFL lights are replace with LED lights.

- All Common Area AHU’s can be controlled by BMS based on the RA temperature

- UPS, Lift, Escalators, DG , BTU, Energy Meter parameters can be monitored in real time and controlled by BMS

Energy Consumption Tabulation for Orion Mall, Brigade Gateway Campus

<table>
<thead>
<tr>
<th>Period</th>
<th>Solar Energy in units</th>
<th>Wind energy in units</th>
<th>KEB Power in units</th>
<th>Total Cons</th>
</tr>
</thead>
<tbody>
<tr>
<td>Apr-18</td>
<td>-</td>
<td>10 LK</td>
<td>5.54 LK</td>
<td>15.54 LK</td>
</tr>
<tr>
<td>May-18</td>
<td>3.92 LK</td>
<td>9.93 LK</td>
<td>2.14 LK</td>
<td>16 LK</td>
</tr>
<tr>
<td>Jun-18</td>
<td>-</td>
<td>14 LK</td>
<td>0.79 LK</td>
<td>14.79 LK</td>
</tr>
<tr>
<td>Jul-18</td>
<td>-</td>
<td>13.5 LK</td>
<td>0.80 LK</td>
<td>14.3 LK</td>
</tr>
<tr>
<td>Aug-18</td>
<td>-</td>
<td>13.5 LK</td>
<td>0.76 LK</td>
<td>14.26 LK</td>
</tr>
<tr>
<td>Sep-18</td>
<td>12.23 LK</td>
<td>1 LK</td>
<td>0.38 LK</td>
<td>13.61 LK</td>
</tr>
<tr>
<td>Oct-18</td>
<td>-</td>
<td>13.5 LK</td>
<td>1.2 LK</td>
<td>14.7 LK</td>
</tr>
<tr>
<td>Nov-18</td>
<td>-</td>
<td>12.6 LK</td>
<td>0.97 LK</td>
<td>13.57 LK</td>
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<tr>
<td>Dec-18</td>
<td>6 LK</td>
<td>7.5 LK</td>
<td>0.93 LK</td>
<td>14.43 LK</td>
</tr>
<tr>
<td>Jan-19</td>
<td>6 LK</td>
<td>6.4 LK</td>
<td>0.58 LK</td>
<td>12.98 LK</td>
</tr>
<tr>
<td>Feb-19</td>
<td>1.95 LK</td>
<td>10 LK</td>
<td>0.56 LK</td>
<td>12.51 LK</td>
</tr>
<tr>
<td>Mar-19</td>
<td>4 LK</td>
<td>10 LK</td>
<td>0.99 LK</td>
<td>14.99 LK</td>
</tr>
<tr>
<td>Total Cons</td>
<td>34.11 LK</td>
<td>121.93 LK</td>
<td>15.68 LK</td>
<td>171.72 LK</td>
</tr>
</tbody>
</table>

Savings due to replacement of CFL lights to LED Lights

<table>
<thead>
<tr>
<th>Description</th>
<th>In units / month</th>
<th>In Rupees/month</th>
<th>Total saving in Rupees/month</th>
<th>Total saving in Rupees/Year</th>
</tr>
</thead>
<tbody>
<tr>
<td>Common Area Consumption prior to LED replacement</td>
<td>58,000</td>
<td>6,09,000</td>
<td> </td>
<td>55,650</td>
</tr>
<tr>
<td>Common Area Consumption post LED replacement</td>
<td>52,700</td>
<td>5,53,350</td>
<td> </td>
<td> </td>
</tr>
</tbody>
</table>

Solid Waste Management at Orion Mall, Brigade Gateway

The solid waste generated from Orion Mall are segregated at source into Organic and Inorganic solid waste. The inorganic solid waste or dry waste is disposed through local recyclers and the organic waste or Wet waste is converted to compost within the premises. About 1,500 kg of manure is generated per month and used for landscaping needs and the excess is sold to local farmers.

Renewable Energy Purchase

Renewable energy is purchased for many of Brigade’s projects, thus promoting renewable energy systems. Below is the summary of Please note the summary of renewable energy (solar & wind) wheeled across our projects.

Solar:

- Contracted capacity – 30 mn.
- Units wheeled in FY 2018-19 – 22.5 mn.
Brigade Enterprises Limited

Energy Consumption Trend at Orion Mall, Brigade Gateway

**Wind:**
- Total units wheeled in FY 2018-19 – 12.19 mn.
- Equity Share Holding in Captive Structure – 9.16%

The list of projects getting renewable energy are:
- Sheraton Hotel, Brigade Gateway
- Holiday Inn Express, Bengaluru
- Orion Mall, Brigade Gateway
- Orion East, Banaswadi
- World Trade Centre, Bengaluru
- MLCP, Brigade Gateway
- Summit 1 & 2, B. Metropolis
- Brigade Tech Park – A & B Blocks
- Brigade Magnum A & B Blocks

Brigade is commitment to use Green power generated through solar and wind power generation systems. Brigade plan to increase the use of Green Power in the coming years to help reduce carbon footprint. The company demonstrates the concept of sustainable development by use of Renewable energy sources in most of its projects.
Brigade Group - Making a difference through Corporate Social Responsibility

Brigade, one of India’s leading developers headquartered in Bengaluru, is a responsible developer, be it planting trees and creating green lung spaces in and around their projects, rejuvenating lakes, redeveloping parks & playgrounds and preservation of ancient trees. Being a mindful brand, we strongly believe in the philosophy of providing a better quality of life for the people within our projects as well as the neighbourhood. We have been dedicated in giving back to the society since inception, even when CSR was not a mandatory activity for corporates.

Redevelopment of Sangolli Rayanna Park at Malleswaram

Brigade has redeveloped the 3-acre Sangolli Rayanna Park at Malleswaram as a contribution towards improving the quality of life of people there. This park was a dark and desolate space, with barely space to walk around or relax and had become the haunt of unsavoury elements. In discussions with the BBMP, this park was resurrected from dereliction at a cost of ₹ 2 crore. From the scores of people at the park each day who come for walks, to exercise etc. the effort has been well appreciated. The Park is open to the public between 5.30 AM and 10.30 AM. and between 4.30 PM. and 8.30 PM. The park was awarded the first prize in the Big Garden Category by the Department of Horticulture.

Some Key Highlights of the Park:
- The Park has an Entry Plaza with a pergola and separate gates for vehicles and public. The security cabin houses the music system controls of the park.
- As a part of unique architectural design, a periphery pathway using interlocking pavers & side RCC kerb has been created.
- A water feature with a length of 30 M with trickling effect has been created which adds the beauty to the park.
- A comprehensive planting scheme with seasonal, perennial and accent planting has been implemented to match the existing tress for architectural design.
- The Park also has 50,000 sqft. of lawn planting along with a fully integrated irrigation system for watering the plants.
- Rainwater harvesting pits have been created at strategic locations of the park for ground water recharging.
- Sculptures of Sangolli Rayanna, Sir. M. Visvesvaraya, Subash Chandra Bose and Mahatma Gandhi have been installed at the park along the walkway.

• A granite flooring Platform has been created which can be used by people for laughter club people and by yoga enthusiasts.

- 10 outdoor speakers with amplifier & DVD player has been installed. This enables visitors to the park to listen to music, live FM radio etc.

- Outdoor Gym equipment has been installed for benefit of senior citizens along with the bollard lights, LED lights, focus lights etc that enhances the ambience and is especially beneficial for the public who use the park facilities in the evening.

Redevelopment of Nadaprabhu Kempegowda Playground in Malleswaram

Brigade redeveloped the 5-acre Nadaprabhu Kempegowda Playground in Subramanya Nagar, Malleswaram at a cost of ₹ 3 crore as a contribution towards community development through sporting activities. The Playground has a range of sporting activities, from a skating rink to a 200-metre racetrack to a basketball and volleyball court. There is also a long jump area and a cricket practice pitch with 2 nets. Space is provided for karate as well as yoga classes. There is also a children’s play area and a seating gallery that can be used during sporting events. The space is being used regularly by sports enthusiasts. The space is regularly rented out by the BBMP to schools and companies in the locality for sports days. The playground has a tree grove area that has been done up with care. The trees here are placed on a slope and had most of their roots exposed from erosion. With the Geo-mat concept, the roots of the trees have been treated and then held in place to ensure no further erosion takes place. Plants have been added across the entire background to make for a green cover.

Rejuvenation of Sitharampalya Lake in Whitefield

Brigade Group joined hands with the NGO for rejuvenating and restoring the Sitharampalya Lake in Whitefield. The lake was once a flourishing lakebed, with a bund dividing it into two pristine parts, but it soon fell to ruin in the name of cut resulting in receding water tables and the flight of birds to greener pastures. So we took it upon ourselves to restore the lake to its original glory at a cost of ₹ 1 crore.

Brigade Group and NGO followed a systematic path to restore the lake. The first step was removing several tons of debris in the lake and its surrounding areas, followed by pitching of bunds to help capture water and ensure it stays within the lake area and does not seep out. Next, was to put pipes or a crack dam in place to check if there is any seepage. The
banks were then pitched with dry stone along the periphery to help arrest any seepage. Then clearing of the two existing feeder channels and also the creation of a third channel was done. We also ensured that no seepage from the surrounding areas was directed into the lake. With all these measures in place, the lake needed just three rain cycles to be seen in its full glory. With this effort, 23.37 acres of the lake area was restored. In addition, we also created a paved walking and jogging track of approximately 400 metres around the lakebed, children’s play area and Pre-cast cement benches at few places on the walking tracks for relaxation of elderly people. We also planted over 1,500 trees in the bund area to encourage flora and fauna to thrive and a separate area created within the lake premises to encourage visiting birds. Nu-algae was introduced into the water to reduce nitrous activity and bring down the growth of weeds.

The Indian Music Experience (IME)
The Indian Music Experience (IME) is the latest monumental and philanthropic initiative of Brigade Group, conceived & sponsored to give back to society and to educate the present generation of the rich culture and diversity of Indian music.

Tree Planting - 30K Initiative - A Goal to Plant 30,000 Trees
We had pledged to plant 30,000 trees in Bengaluru. As of date, 40 tree planting camps have been organised and over 12,000 trees have already been planted, helping provide the city with much needed green cover. Our efforts have borne fruit; the native and indigenous trees that were carefully chosen are growing well. And all the trees are closely monitored during their early years of planting, and therefore the survival rates are very encouraging. As an organisation, we stay committed to the task - 30,000 trees and we will continue our efforts till we reach this goal.

<table>
<thead>
<tr>
<th>Sl. No.</th>
<th>Location of Plantation Number of Trees Planted</th>
<th>Year of Plantation</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Brigade Seven Gardens 118</td>
<td>2018 &amp; 2019</td>
</tr>
<tr>
<td>2</td>
<td>Brigade Altamont 86</td>
<td>2016</td>
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<tr>
<td>3</td>
<td>Brigade Atmosphere 1,041</td>
<td>2017 &amp; 2018</td>
</tr>
<tr>
<td>4</td>
<td>Brigade Bhuwalka Icon 77</td>
<td>2016</td>
</tr>
<tr>
<td>5</td>
<td>Brigade Bricklane 11</td>
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<td>6</td>
<td>Brigade @ No. 7, Hyderabad 12</td>
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<td>7</td>
<td>Brigade Buenavista 87</td>
<td>2018 &amp; 2019</td>
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<td>8</td>
<td>Brigade Exotica 103</td>
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<td>9</td>
<td>Brigade Lakefront 880</td>
<td>2017, 2018 &amp; 2019</td>
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<td>10</td>
<td>Brigade Northridge 543</td>
<td>2017 &amp; 2018</td>
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<tr>
<td>11</td>
<td>Brigade Tech Gardens 119</td>
<td>2018 &amp; 2019</td>
</tr>
<tr>
<td>12</td>
<td>Brigade Cornerstone Utopia 150</td>
<td>2019</td>
</tr>
</tbody>
</table>
Sl. No. | Location of Plantation               | Number of Trees Planted | Year of Plantation |
-------|--------------------------------------|-------------------------|--------------------|
14     | Brigade Cosmopolis                   | 185                     | 2018 & 2019        |
15     | Brigade El Dorado                    | 225                     | 2019               |
16     | Four Points by Sheraton, Kochi      | 45                      | 2018               |
17     | Brigade International Financial City, GIFT City | 10                  | 2019               |
18     | Grand Mercure, Mysuru                | 58                      | 2018               |
19     | Brigade Golden Triangle              | 597                     | 2016, 2017 & 2018  |
20     | Holiday Inn Express, Racecourse Road | 15                      | 2018               |
21     | Holiday Inn, Chennai                 | 43                      | 2017               |
22     | Brigade IRV Centre                   | 175                     | 2016               |
23     | Brigade Meadows                     | 1,362                   | 2016, 2017 & 2018  |
24     | Brigade Mountain View                | 65                      | 2018               |
25     | Nalapad Brigade Centre               | 50                      | 2016               |
26     | Brigade Omega and Thurahalli Forest  | 140                     | 2017               |
27     | Brigade Opus                        | 35                      | 2018               |
28     | Brigade Palmgrove and Perl @ Brigade Palmgrove | 212                | 2017, 2018 & 2019 |
29     | Brigade Panorama                    | 617                     | 2018 & 2019        |
30     | Brigade Parkside – East (Sarjapur Road) | 5                   | 2019               |
31     | Brigade Parkside – North             | 33                      | 2018               |
32     | Brigade Pinnacle, Mangaluru          | 131                     | 2016 & 2017        |
33     | Brigade Symphony                    | 180                     | 2017 & 2018        |
34     | Brigade Utopia                       | 128                     | 2018 & 2019        |
35     | Brigade Vantage                     | 8                       | 2018               |
36     | World Trade Centre, Chennai         | 100                     | 2018 & 2019        |
37     | World Trade Centre, Kochi           | 35                      | 2017 & 2018        |
38     | Brigade Xanadu                      | 725                     | 2017, 2018 & 2019  |

Total 12,075

Trees Transplanted at Brigade’s Project Site

Sl. No. | Location of Plantation       | Number of Trees Planted |
--------|-------------------------------|-------------------------|
1       | Brigade Twin Towers          | 75                      |
2       | Brigade Panorama             | 31                      |
3       | Brigade Meadows              | 7                       |
4       | Brigade Xanadu, Chennai      | 27                      |
5       | Brigade Orchards             | 48                      |
6       | Brigade Tech Gardens         | 42                      |
7       | Brigade Southfields          | 24                      |
8       | Brigade Woods                | 47                      |

Sl. No. | Location of Plantation       | Number of Trees Planted |
--------|-------------------------------|-------------------------|
9       | World Trade Centre, Chennai  | 29                      |

Total 246

Beautification of Bengaluru

In association with The Ugly Indian (TUI), we have also beautified the pillars at Anand Rao circle—opposite Holiday Inn Express, Racecourse, Sandal Soap station metro pillars, Bellary Road flyover pillars – opposite Brigade Opus and Brigade Magnum, and the Mekhri Circle underpass.

Over the past 3 decades of Brigade’s evolution, we have taken many initiatives as corporate citizens. Below is the list of the other social welfare activities undertaken by Brigade Group:

Redeveloped the Yeshwanthpur Police Station in Bengaluru
- Took the initiative in strengthening the road infrastructure by the Development and formation of a 2.4-km long and 50-65 feet wide road stretch of the further extension of 24th Main in J.P. Nagar costing ₹ 3.5 crore. In appreciation of this gesture, the civic authorities concerned have renamed the road “Brigade Millennium Road”
- Remodelled and renovated the office building of Chief Fire Officer Bengaluru West Zone located at the High Grounds Fire Station
- Brigade Group and the Indian Institute of Technology, Madras, a premier Institute of National Importance, have established a Chair Professorship/fellowship in the Department of Civil Engineering, IIT Madras for Education and Research in the areas of Project Management, Construction Engineering and affordable Housing
- Instituted the scholarship & merit awards to the civil engineering students of 3rd and 4th year of R.V. College of Engineering, Bengaluru
- Contributed and installed a statue of Swami Vivekananda at Ulsoor in Bengaluru.
- Commissioned and installed the statue of Mahatma Gandhi at Brigade Gateway Campus, Bengaluru

Brigade Real Estate Accelerator Program (REAP)

Brigade Real Estate Accelerator Program (REAP) aims to help Innovators and Inventors utilise technology to create sustainable and scalable businesses in the Real Estate industry, an industry ripe for disruption.

We aim at providing them with resources and support (both Intellectual and Infrastructure) including domain knowledge both across sectors and in technology as also deep
mentorship from industry leaders and entrepreneurs who have been there and ‘done it’. The program will also provide customer access for product validation & adoption along with investor connects.

The four month structured program has been developed over the period of working with Startups, Investors, corporates, academia and domain experts with a focus on helping young companies scale.

The sectors we are focusing on at this point of time are those where technology and innovation can deliver significant impact to the Real Estate, Retail and Hospitality industries.

- Cleantech and Renewables
- Nano Technology
- Visual Computing
- Logistics and Supply Chain
- IOT Internet of Things, etc.

Benefits of the Program

Structured Program
The Program covers almost every aspect required in helping a company create a scalable and sustainable business.

Access to Customers
Young companies need access to customers at every stage in their journey who are willing to listen to them with an open mind.

Mentorship
Industry leaders and successful entrepreneurs who have “been there, done that” have agreed to work with young companies in the program.

Investment and Other Financial Benefits
The program will help startups develop and in-depth investor pitch and business plan along with the opportunity to present to investors from across the country.

Dedicated Team
The team aims to help some path breaking companies scale successfully and raise funding.

Workspace
An invigorating self-contained workspace with facilities and amenities to help companies focus on their core business. WEGoT is an IoT startup providing water management solution that reduces the demand for water by up to 50% in a building. It helps manage the entire water infrastructure in a property by acquiring granular consumption data that was previously unavailable through high precision sensors that track flow, pressure and quality of water and then applying it to the various water related applications in the property.

The platform can detect leakages and remotely shut them off in real time from our mobile phones. It also tracks abnormal consumption, fixture efficiency and helps buildings become more water efficient. The system reduces the water consumption by up to 50%, maintenance cost by more than 30%, manage and improve the efficiency of all the water related assets like pumps, treatment plants etc.

WEGoT has managed to save more than 550 mn. litres of water so far and are present in 25,000+ apartments and manage water in more than 20 mn. sqft. of commercial space.

At the Brigade, WEGoT will implement the solution in two project during the period 2019 - 2020, Brigade Buena Vista comprising 742 dwelling units and Brigade Woods comprising 333 dwelling units.

Synconext
Today’s commercial buildings waste about 35% of the energy costs as there is no visibility of actual people occupancy of spaces. Synconext’s is a technology startup, providing integrated software driven solution for managing your workspaces efficiently to help reduce significantly reduce energy costs, improve utilisation of real estate & help customer take insightful decisions.

Value Prop
Using the captured real time granular occupancy data in the workspaces, and integrate with the existing HVAC and lighting systems to provide deep optimisation of the energy consumption based on a number of factors (usage behavior, rule engine, etc.). We are India’s 1st company that captures granular occupancy data and using IoT technology, we create real-time actionable scenarios in to recapture wasted energy cost, while improving employee comfort and productivity.

The solutions are fully plug-n-play and suitable for new & existing buildings (without any damage to existing infrastructure)

Work at Brigade
Our solutions have been used in the WTC board room & facility office areas. We have provided our plug-n-play solutions to solve the problem of energy wastage during occupancy and unoccupancy times.

In the areas of deployment, we have been able to reduce their energy consumption by average of 25% and additionally provide data on occupancy behavior of the space.

Smarter Dharma
Smarter Dharma is a social-enterprise operating spectrum-wide in the field of sustainability. They work at the intersection of environmental sustainability and economical viability for its clients. They are motivated to facilitate the global efforts to transition to a circular economy by helping our clients shift
from the ‘business-as-usual’ approach to one that entails efficient and sustainable business practices.

Over the past seven years Smarter Dharma has worked with many real estate and non-real estate corporates across India to design solutions to mitigate more than 25,000 tons of carbon.

**Smarter Dharma’s Value Prop**

Smarter Dharma is India’s first platform that delivers Sustainability through Cost and Resource Optimisation for the Real Estate industry.

Their expertise and approach helped them deliver a Carbon Neutral community in Bengaluru and helped design another in Hyderabad.

**How Brigade is utilising Smarter Dharma’s Services**

Smarter Dharma is bringing in a more focussed and holistic approach to Brigade’s journey towards Sustainability. At Brigade Cornerstone Utopia project, Smarter Dharms is helping decide the most optimal route to adopt sustainability across it’s operations.

As a first step, Smarter Dharma is working with the Utopia project team to inject sustainable solutions right at the Design Phase. Smarter Dharma is also working with the marketing and sales teams of Utopia to be able to build the brand of Utopia around the idea of a Future-Ready housing experience. Various communication strategies are being designed along with the internal team to position Brigade as the best developer who is walking the talk of sustainability in built-environments.

**Natura**

Natura is an urban plantscaping company that uses natural resource like cocopeat as an alternate to soil to create vertical gardens and roof top gardens thereby reducing the temperature by up to 6 degrees. The cocopeat is a superabsorbent media that is ten times lighter than soil and can retain up to 6 times more water than soil. Natura has huge benefits like gives you a better breathing environments, reduces energy costs, improves over all human productivity in built areas, and can be used on compounds, building facades and indoor spaces too.

Natura offerings range from green walls, vertical gardens, moss walls and custom indoor greening. We work in synergy with designers and architects of different cities to bring their green designs to life in the most unique and unusual indoor spaces.

**Value prop**

Natura’s products and services offer architects and designers one stop solutions for all their plantscaping needs.

**Eco STP – Sewage to Gold**

There are 13 million people living in Bengaluru. When they flush, nearly half of their waste reaches the city’s lakes and the lake burns. It is a sad fact. According to the Pollution Control Board of India, out of the 29,129 MLD (million litres per day) of sewage generated, only 6,190 MLD is treated. The gap is a shocking 78.7%. The solution is to implement Sewage Treatment Plants, but Conventional STPs need power and India does not have power! India has energy shortage and is difficult to get ‘power’ to ‘treat’ India’s sewage.
Our unique “Zero Power Zero Maintenance” Sewage Treatment Technology using anaerobic bacteria has no moving parts compared to conventional STPs which use energy, hogging motors, exhaust fans, pumps, and blowers. The product is a replica of a cow’s stomach based on biomimicry concepts.

We propose to treat all this water in a decentralised, natural, and cost-effective way, reclaim as much as possible, and help real estate builders craft a sustainable community where wastewater management is within a closed loop system. Our solution is a stress-free, eco-friendly, and cost-effective way of treating and reusing water, making the city less dependent on freshwater resources and helping us become more resilient.

We started the Brigade journey with 2 projects - Brigade Triumph and Brigade Utopia. The projects are in different phases of execution. In this project we will be measuring the impact in 2 specific areas besides savings on running costs - Treated water in Kilo Litres and Power Saved for Brigade Group post go live.

Clairco

Disruption in air purification with low-cost air purification using nano-technology.

Indoor air quality is 5 times worse than outdoor air. With most of the time being spent indoors, either at offices or homes, indoor air quality is becoming extremely important to make for a healthy living.

Clairco is an indoor air purification company that helps businesses ensure clean air in an affordable and measurable way by adding purification capabilities on existing HVAC systems. They also install air quality monitors that measure in real-time the indoor air quality data that can be seen on a dashboard and shared with people using your space. The solution is completely capex free with very low operating costs. The air quality data can be shown on any platform in real time be it online dashboard/mobile app or a TV screen found in the reception of most offices.

At Brigade Group, to begin with, Clairco is closely working on a plan to install their indoor air purification capabilities in the co-working spaces (BuzzWorks). Clairco already has customers like Cult.fit and Blue Tokai pan India using their purifications solutions.

Stakeholder Engagement

All our stakeholders viz. employees, vendors, customers etc. are part of our journey pertaining to environmental sustainability. We encourage and motivate our employees to volunteer for environmental causes in and around our areas of operations. The details of the same are part of this Annual Report.