



HORINOUCHI YOSHIHIRO

DMD - Manufacturing

OUR ENVIRONMENT

India, over the years has positioned itself as a potential global economic power. The ever growing demand of automobiles in India, is a testimony to its enormous consumer base and export potential, which has enabled Indian automobile industries to significantly contribute to the country's GDP.

We at Toyota, have always strived to make better cars and delight our valued customers with 'Jidoka' – Automation with Human touch. In response to the growing global environmental concerns leading to stringent government mandates on the use of cleaner fuels and eco-friendly vehicles, Toyota, since two decades, has worked relentlessly and pioneered the development of Hybrid systems and mass production of full hybrid vehicles as its fundamental obligation towards Environmental protection.

As a responsible manufacturing industry, we at TKM have adopted a holistic approach towards Environmental Sustainability by improving our performance in every step of production, operations, purchase, logistics, sales and commutation by embedding the principles of harmony with nature. As an EMS - ISO 14001 Certified company, we always strive to ensure zero non-compliance and no complaints with the legal and other statutory environmental compliances and have set benchmark of 20% more stringent than the regulatory standards.

Moving forward, we will continue to develop automated technologies that further reduce our carbon footprint.



ALL NEW

INNOVA
CRYSTA

LUXURY
MEETS
POWER



OUR ENVIRONMENT

Toyota Kirloskar Motor strives to protect the environment by improving performances in its manufacturing operations, products and supply chain. We identify the risks and challenges at every step of our operations and employ Kaizen to reduce footprint.

Our pledge towards environmental sustainability is guided by our policies, long term action plans & periodic reviews by our top management. We also actively design strategies that ensure operational efficiency with the lowest energy requirements.

ENVIRONMENT POLICY

As a good corporate citizen, we are committed to the protection of the environment, pollution prevention and conservation of natural resources. We strive to minimize impact on the environment through, continuous monitoring and improvement of processes.

To support this commitment, our policy helps to:

- Proactively promote environmental awareness and knowledge among team members through constant education and job specific training
- Ensure compliance with legal as well as other requirements to which our company subscribes
- Establish and review environmental objectives and targets annually, to ensure better environmental performance through proactive and ongoing improvement activities
- Establish programs that conserve energy, natural resources, flora and fauna; building a green environment within and in our surroundings as a part of the policy

We recognize the importance of continual improvement in environment performance, while ensuring economic growth and maintaining a competitive advantage. We are committed to this philosophy and strive to share this commitment with all our stakeholders.

TOYOTA MANUFACTURING ENVIRONMENTAL POLICY

Toyota has established a comprehensive Manufacturing Environment Policy to guide Environment Management System (EMS) at all its subsidiaries including TKM. It is designed to make Toyota an eco-friendly company and forms the backbone of our commitment towards reducing the impact on the environment.



Key pillars of Toyota Manufacturing Environment Policy

GOING BEYOND COMPLIANCE

We believe in adherence to the law as a top priority issue. Since the inception of operations, we have never faced penalties for non-compliance with applicable regulations. We have established our own benchmark that is 20% more stringent than the applicable regulatory standards, and this demonstrates strong commitment towards compliance. In view of this, the organization has established both online and offline control methods to proactively ensure 100% compliance.

We have established our own benchmark that is 20% more stringent than the applicable regulatory standards. We ensure it through a comprehensive tool designed to identify & escalate potential risks in advance.

- **Legal Compliance Management Tool (LCMT)** is an online tool, which acts as a real time monitoring system and ensures compliance at all levels, across all divisions. The tool helps in sending alerts to the responsible person for complying with the activities and also provides the real time compliance status report to the Senior Management and Directors
- **Comprehensive Legal Compliance System** is an offline system consisting of all applicable legal requirements which have been identified and converted into actionable procedures. It is a multilayered monitoring system which covers all processes from shop level to corporate level to ensure legal compliance. It is reviewed monthly by Environment Management Representative [EMR] in presence of the environment window persons and the division heads
- **Periodic monitoring of new regulations at TKM**, is done by engaging with the experts who update and advise us about any change in regulation on a monthly basis. Upon understanding the change and applicability of the regulation, an action plan is derived and communicated to relevant stakeholders

CORPORATE ENVIRONMENT COMMITTEE

The Environment Committee monitors the environmental performance of the company and comprises of representatives from all functions across the organization. The committee is led from the front by the Managing Director as its Chairman, and Deputy Managing Director and Senior Vice President-Manufacturing, supported by all the division heads and window persons.

There is a quarterly meeting of the group heads with the top management for discussions about the achievements, challenges faced and strategic directions for the partners. A centralized environment team works on translating the directions of the top management into an action plan.

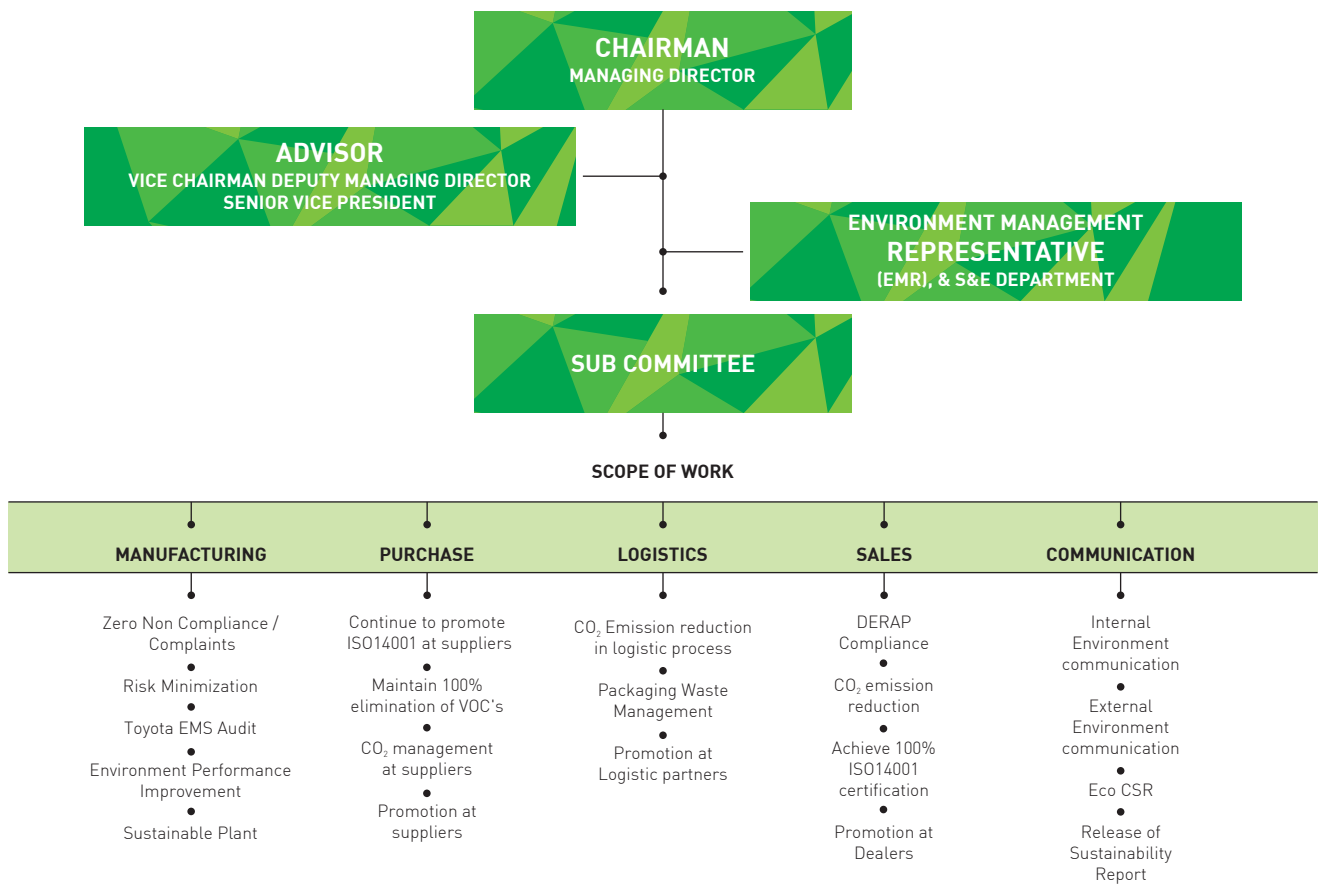
A centralized control centre has been established by the

Environment team to help enhance the performance of the committee.

The EMR periodically reviews the progress and plays role of vital link between the top management and deployment terms.

Clearly defined minutes of meeting with expected action plans are prepared and circulated among all group heads. The progress of implementation is tracked by the central environment team.

An Environmental Grievance Mechanism has been set up to address the key challenges and issues arising during manufacturing, logistics and operations. We have not received any grievances about environmental concerns in this reporting year.



FIVE YEAR ENVIRONMENT ACTION PLAN

Global directions for Environment Action Plan are defined by TMC which comprises of specific actionable plans. The key components of this action plan include three priority themes:

- Contribution to a Low-carbon Society,
- Contribution to a Recycling-based Society and

- Environmental protection and contribution to harmony with nature and society.

Our environment performance is detailed out in the Five year Environment Action Plan, through which the annual environment plan is formulated and implemented at the plant level.



OVERVIEW OF THE 5TH ENVIRONMENTAL ACTION PLAN (FY2012-FY2016)

The Five year Environment Action Plan defined the actionable items and goals for the five year period starting from FY2012. The two key strategies employed while we prepared the plan were considering:

- Environmental risks and business opportunities in corporate operations
- Futuristic Environmental initiatives & impending regulations over the next decade.

Embracing the three priority themes, we aim to contribute to the sustainable development of society and the world through 'monozukuri' which means manufacturing in harmony with nature & society. This Five year plan, however, has been extended for another 2 years, in view of the revised Global Environment Action Plan preparation by headquarters, scheduled from 2016-17.



Following is the brief description of the initiatives undertaken to enhance and achieve the environment performance as per TKM's Five year Environment Action Plan.

I. ESTABLISHING A LOW CARBON SOCIETY

Globally Toyota has always considered climate change as a threat to environment sustainability & repositioned its environment strategies in the entire product life cycle starting from-design, development, manufacturing, logistics and sales.

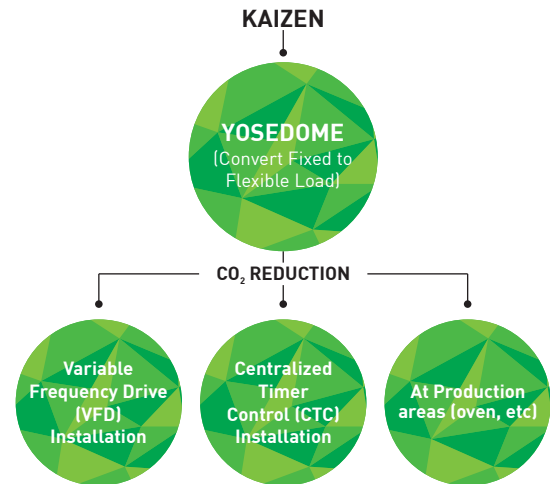
Activities to Reduce CO₂ Emission In Supply Chain

We understand that there is immense scope to conserve energy in our operations. Hence, we constantly endeavor to reduce our carbon footprint from our operations that will help us in achieving energy and emissions optimization. Following are some key initiatives towards reduction of CO₂ emissions from our operations.

Conversion of Fixed Load To Variable Load

Our energy reduction practices have been focused primarily on conversion of fixed load to variable load. By automating the system or by introducing variable frequency drives, the equipment runs only when production happens & further the equipment would draw power only based on the demand.

Thinking Way

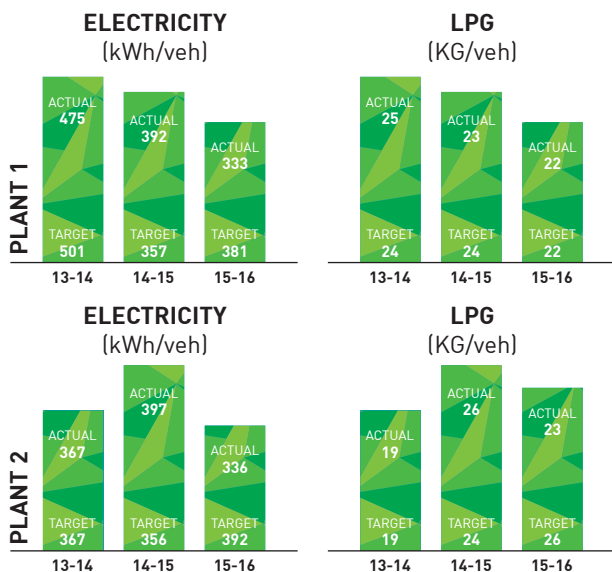


In order to achieve reduction in plant energy consumption, we enable our employees to identify, justify, and implement energy saving Kaizen. This has inculcated a culture of innovativeness among our team members as a part of Toyota work-culture.

Significant effort has also gone into utilization of advances in the technology and adoption to the plant energy management to bring about a radical shift in energy usage.

GHG Emissions (t/veh)		2013 - 14	2014 - 15	2015 - 16
Plant 1	Scope 1	0.07	0.07	0.0625
	Scope 2	0.41	0.41	0.3867
Plant 2	Scope 1	0.06	0.07	0.0652
	Scope 2	0.35	0.4	0.388

Annually, environment performance targets are established based on the Five year Environment Action plan. The responsibilities for achieving the targets are assigned to relevant departments. Progress is monitored periodically by environment director.



Redefine Logistic Standards to Enhance Efficiency

To achieve a low carbon society, it becomes imperative to improve efficiency at all stages of the supply chain. We thereby ensure optimization of our logistics operations at all stages to reduce CO₂ emissions.

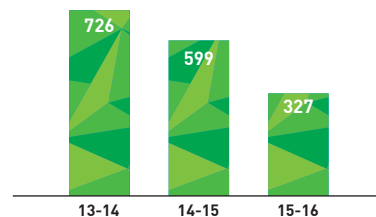
Toyota genuine parts and accessories are supplied to outlets across India. Logistics operations are carried out by dedicated fleet of trucks. That operate over 24,960,000 km annually and emit approximately 9,800 tons of CO₂.

Involving our logistic partners we could redefine our standards which has led to reduction of a significant impact on environment like:

- Usage of vehicles not more than 7 years of age.
- Replacement of the older vehicles with new ones complying with stricter emission norms such as the Bharat Stage IV.
- Fuel efficiency improvement with load optimization and fill rate improvement in trucks.
- Restructuring of routes to improve truck fill rate and reduce running km.
- Usage of rail mode of dispatch to North eastern region.

FY2015-16 saw a reduction of 272 tCO₂e from FY 2014-15 as a result of the activities.

We aim to explore the options of despatching some "Truck on Train" (CO₂ reduction by distance optimization and elimination of multiple handling of parts) and deploy CNG trucks at Delhi and Mumbai, for the possibility of further reduction in CO₂ emissions in the coming years.



CO₂ emissions through optimization of logistics in tCO₂e/yr

Double Impact: Mitigating Business Risk & Reduction of Carbon Footprint

Import and export operation are of key importance to TKM, in order to obtain the right raw materials at the right time for manufacturing of our quality products.

Chennai port, which is at a distance of 420 KM from our manufacturing plant, was being utilized to carry out our import and export vessel operations. Chennai port caters to the bulk of export & import requirements in the country leading to tremendous congestions & time delays amounting to additional 18 hours to the otherwise 57 hour lead time.

This often led to non-availability of minimum stock, creating risk of line stop at TKM and increase in the CO₂ emissions from the logistics.

A detailed impact study was conducted and the impacts on the customers, cost and time were identified. The study showed that almost 70% of problems were port specific, calling for an alternate strategy to cater to present & future demands.

A comparative study of three ports; was conducted. However, Katupalli port at the outskirts of Chennai at a distance of 25 Kms from the Chennai port was identified as the alternate port after detailed assessment.

With the introduction of Katupalli port, the lead time has reduced by 39 hours.

As a result of the impact and feasibility study, we have successfully established Katupalli port as our alternate port and it contributes to 100% exports and 80% of our imports. At present, the lead time benefit is being monitored through GPS data for further reduction in the lead time.

Business Risk Mitigation by Relocation of Supply Base

The LPG supply for TKM is from Mangalore City, at a distance of 387 KM via Shiradi Ghat from our plant. The continuous supply of LPG is necessary for the plant to operate without any interruptions.

As the monsoon season approaches, Mangalore city receives heavy rainfall. Frequent landslides and road accidents interrupt in the LPG supply. This necessitates us to maintain minimum stock level of LPG, as it would trigger Line Stop or production loss, if not anticipated and planned for.

A Communication channel was initiated and established for communicating and escalating the interruption issues as well as the impact of these interruptions on production and profitability of the industry, to our Gas suppliers.

As an outcome of our efforts, an extra stock of gas is made available at Nelamangala station (45 KM from TKM) by our suppliers, in case of any eventuality.

Reduction in Painting Booth Energy Consumption

We conduct activities to save energy and reduce the volume of GHG emissions in production activities. One of the most common activities we noticed is the idling of the equipment during the no body production time, thus, resulting in high energy wastage and GHG emissions.

To overcome this problem, painting booths were individually split, and standardized for the startup time. The doors were provided at the pre heat to avoid heat loss. The booth is switched on with body synchro instead of the single control. This has led to GHG emission reduction of 32.53 Kg/vehicle making 2331450 Kg annually.

Energy security is crippling the country. We understand that as a responsible corporate, we must reduce our dependency on the grid power. We look forward to enhancing our investment on renewable energy & infrastructure.

Our future plans include initiation of about 3MW of Solar Energy as a step towards self-sustainable energy system. Initiation of many energy reduction activities like heat pump installation, FRP fan for cooling towers, maximize renewable power trading an average of 15% in the upcoming year. The option for utilizing into RLNG is also being expedited.

Technology - An Enabler to Mitigate Climate Change

While the procurement of raw materials and transportation of accessories and products to their destinations is vital, reducing the distance to the destination not only aids in saving time but also reducing the CO₂ emissions.

We have optimized the distance of travel through identified alternate routes for our logistic operations, thereby lowering the fuel consumption. The distance to Gulbarga was reduced by 55 KM through an alternative route via Dharwad instead of Belgaum and the distance to Goa was reduced by 85 KM via Bellary instead of Bijapur.

The challenges faced included the dependency on infrastructure for development of new routes, and consistency in fleet availability. However, our team explored the new road linkages through Google mapping for alternate routes and was in continuous discussion with the sales department to bridge up the gaps between the demand and supply. This helped us achieve the distance CO₂ reduction of 0.40 Kg/vehicle.

Initiatives to Promote Clean Air

While carbon emissions form the largest part of emissions from manufacturing, oxides of nitrogen, sulphur and particulate matter are also considered relevant to

environmental pollution. To keep environmental pollution levels under control, the ambient air quality is checked on a monthly basis.

We do not use any ozone depleting substance for manufacturing of vehicles. The Chiller unit at paint process is filled with R134a gas which is free from CFCs and all AC's fitted into newly manufactured cars are CFC free.

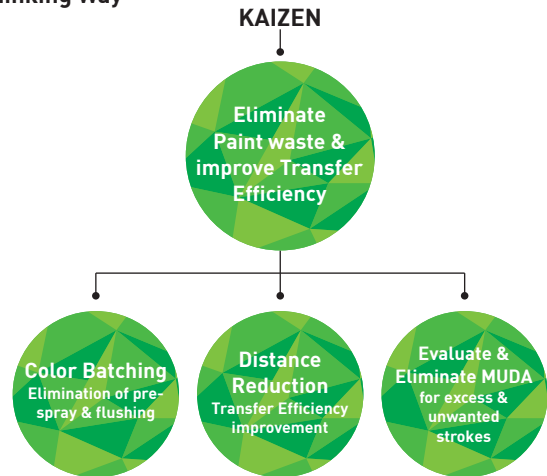
NO_x SO_x Emissions

Emissions (µg/m ³)	DATA COVERAGE	2013 - 14	2014 - 15	2015 - 16
NO _x	100%	21	20.6	16.25
SO _x	100%	11	10	5

Reduce VOC Emissions in Production Activities

We have always attempted to reduce the VOC emissions from the painting processes. Our key initiatives include, establishment of Color batching system for reducing pre-spray and flushing VOCs, distance reduction and paint flow optimization to enhance the transfer efficiency.

Thinking Way



Water Based Painting

The automotive painting involves organic based thinner solvents commonly known to contain harmful Volatile Organic Compounds [VOC]. We aim to reduce and eliminate the harmful VOC emissions and endeavor to promote newer non-VOC processes. As a start, at Plant 2 we have introduced water-borne painting in the Paint Shop, cutting down our VOC emissions by more than 50%. As a result of attaining success with the introduction of water based painting technology in the manufacturing facility, similar technology has been implemented at our servicing facilities of dealerships across the country.

VOC Emissions (MT)	2013 - 14	2014 - 15	2015 - 16
	449.12	447.41	382.0

Through the visionary 'one drop saving' concept, we could reduce VOC emissions by more than 40% in the last 10 years at Plant 1. We stand No.1 among the AP affiliates in the area of VOC emission reduction.

In the year 2014, fifteen affiliates of Toyota visited TKM, Bidadi to learn and benchmark the best practices of VOC emission reduction.

II. ESTABLISHING A RECYCLING BASED SOCIETY

Earth's resources are limited while population is on the rise. With the current trends of consumption, the earth's resources are tending towards depletion. It becomes imperative for judicious consumption and utilization of these available resources to ensure our future generations are sustained. In alignment with this notion, we have adopted the 3R strategies (Reduce, Reuse and Recycle) for the appropriate disposal of waste.

Water Consumption Reduction

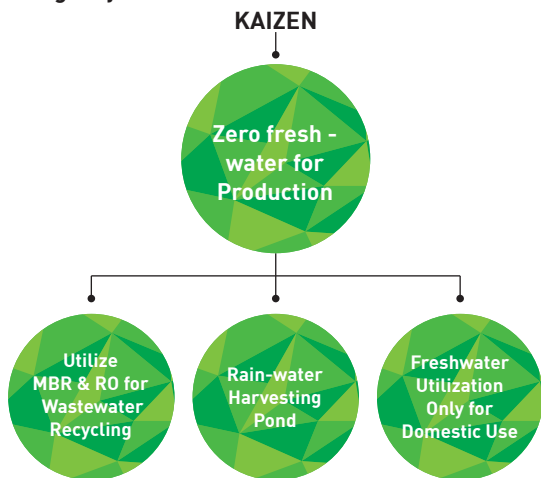
In recent years, the increased exploitation of water has become a serious issue. India is threatened with a difficult and tumultuous water future. Given these challenges, we are committed to conserve and manage this precious natural resource.

Our plant receives its supply of water from the Karnataka Industrial Area Development Board (KIADB) for both domestic and industrial purposes. We have been promoting activities to recycle the treated effluent in various operations thereby reducing the fresh water consumption in line with the philosophy of 'Zero discharge'.

Efforts to Reduce Water Consumption

Optimization of water consumption involving the team members for 'YOSEDOME'- lean manufacturing concept has been taken up. In this concept, the following three Kaizens have eventually contributed to overall reduction in the water consumption.

Thinking Way



Zero Freshwater Footprint at Manufacturing

The industrial wastewater is subjected to chemical treatment followed by activated sludge treatment. It then passes through membrane Bio Reactors and Reverse Osmosis. Domestic wastewater is mixed with chemically treated industrial wastewater prior to activated sludge for further treatment. We have a well established in-house laboratory with qualified analysts for regular monitoring of quality and to ensure optimum performance of the treatment plant.

We recycle the permeate back to the process thereby achieving 0% dependence on freshwater for manufacturing.

Faced with a challenge of balancing the cost of water recycling and legal requirement of water for utilization of treated water for on-land irrigation, we have set recyclability ratio to 60%. This means our wastewater treatment plants treat & recycle 60% of the wastewater back into the manufacturing process and 40% of the wastewater is safely disposed on land for irrigation.

Rainwater Harvesting

In order to further achieve self-reliance over freshwater intake, we have initiated harvesting and reuse of rainwater. The total surface run-off and roof top water is collected in harvesting tanks and further processed for reuse in the production. The effort has positively impacted our endeavor to reduce water requirement.

Our ultimate aim is to reduce the consumption of water provided by the government and use rainwater as our primary source at our second manufacturing plant.

To promote the reuse and optimal use of water, the height of the inlet channels of the rainwater harvesting pond has been increased, thus upgrading its storage capacity from 25,000 cubic meters to 35,000 cubic meters.

Reduce Waste Generation and Efficient use of Resources

The wastes generated at an automobile assembly plant like that of TKM, range from recyclable to non-recyclable wastes. These, in-turn, may be either non-hazardous waste or hazardous waste. We strive to go beyond the statutory legal compliances to reduce wastes (both hazardous and non-hazardous). All the waste generated inside the plant is sent to authorized vendors situated within Karnataka. However, we at TKM ensure utmost care to achieve 'Zero hazardous Waste' to landfill as per the Toyota Earth Charter.

Sludge Drying Yard

To take sustainable waste management a notch higher, we have built a Solar Sludge Drying facility to handle hazardous waste sludge at our Bidadi plant; we could reduce the moisture in sludge by 60% thereby reducing the volume of sludge.

Our attention has shifted well beyond hazardous waste, looking for environment friendly alternatives to landfilling for other waste categories. Co-processing, an environmentally superior waste treatment option recognized by international bodies and proven by life cycle assessment studies, is now our preferred option for all non-recyclable waste.

Co-processing ranks higher in the waste processing hierarchy as it reduces the burden on TSDF (Treatment, Storage, and Disposal Facility). It maximizes the recovery of energy while ensuring safe disposal of waste, immobilize toxic and heavy material and produces overall environmental benefits by reducing releases to air, water and land. Despite the high cost of operation, we have embraced the co-processing technology to foster its environmental consciousness.



Vermi composting

Our ambitious venture towards achieving Zero Waste to Landfill, initiated several alternative options for waste minimization to utilize biodegradable waste (Non-Hazardous) in an eco-friendly manner.

Bio-sludge is an outcome of sewage treatment process. After conducting an extensive study involving various composting techniques, the Plant Engineering team arrived at an option of vermicomposting technique, which would convert the waste generation quantity [to be sent for landfilling] into manure.



As a part of our sustenance plan, the vermi-manure thus produced, is utilized for our gardening purposes and is also supplied to the Bidadi Industrial Association for sapling plantation.

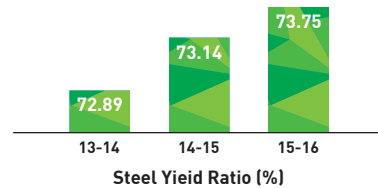
Adoption of Vermicomposting technique reduced the land filling cost and curtailed the CO₂ emissions up to 18t/annum.

Efficient use of Resources

Steel

Steel constitutes up to 23 percent of the weight of the final finished product and is an essential raw material for the passenger car automobile industry. It is also a major contributor of CO₂ emissions throughout its lifecycle. Hence, we are continuously working on 'Steel Yield Improvement' under 3-tier concepts to increase the steel yield by using steel effectively without letting it be wasted, in order to cut down the carbon footprint.

During this reporting year, the Steel yield ratio of Plant 1 manufacturing Innova was 73.75%. Though there was a minor increase in the yield ratio, we are expecting a dip in this ratio owing to the introduction of the New Model of Innova Crysta, which is expected to reset the steel utilization patterns due to the new pattern of the shell-body. However, we shall continue with our efforts to stay on top of the Steel yield improvements and lead the Asia pacific affiliated in its exemplary performance.



Optimization and Standardization of Packaging Material Specification and Usage

Packaging is one of the key components in ensuring the quality of the end product to customer and is also responsible for the brand image of the company.

Packaging material is immensely crucial to maximize the value derived from natural resources. We encourage creative solutions to reduce the weight of the logistics and thereby reduce CO₂ emissions in inbound containers. This is done by packing redesign and regrouping. The activity led to the formation of a dedicated task force for monitoring through Genchi Genbutsu.

The redesign in module efficiency as resulted in space reduction of 11.0 m³/20veh & container reduction of 3 nos / month, thereby, steel reduction of 5.6 tons/month. We achieved CO₂ reduction of 0.26 kg /veh.

We plan to ensure sustainability by standardizing best practices and Kaizens across committees, apply Yokoten and review the less efficient modules.

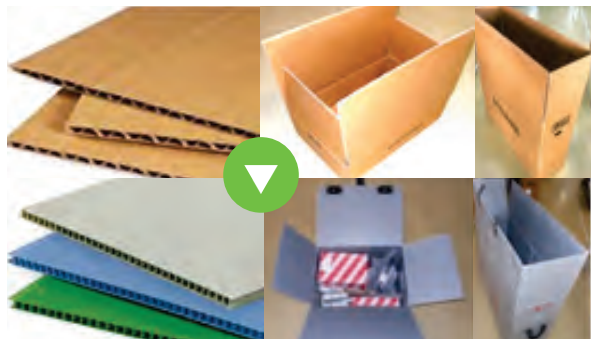
Standardization of Packaging Material

With efficiency and environmental pressures being a key concern, our suppliers are also interested in improving the packaging component. In most instances, the vehicle parts and production line equipment are of high value and are fragile. There are a number of damage risks that can occur during storage and handling. But unpacking these parts generates quite a bit of waste and ultimately has an impact on the environment. We have adopted the "Reduce, Reuse and Recycle" concept to reduce waste and standardize packaging, as it forms an integral part in the manufacture line.

To optimize packaging material, the following Kaizens have been incorporated;

- Innovative design changes in packaging.
- Minimizing the usage of paper in our operation (Go Paperless Campaign)
- Supply of Parts using Returnable boxes to all dealers in Tier 1 Cities
- Modification of existing packaging material specification in line with Indian condition

Our service parts division has identified a unique solution to ensure efficiency in packaging. Cardboard-one time use boxes are replaced with returnable corrugated boxes.



Going Paperless at Logistics

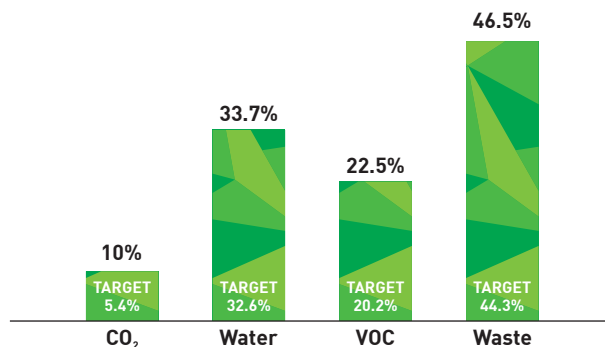
Documentation plays a vital role in transactions from the supplier to our logistics partner at TKM. It involves lot of documents and labeling which are mostly mandatory. Hence, a Kaizen was initiated to identify the mandatory documents, eliminate the extra copies and reduce the label size.

During the FY 2015, we documented only the mandatory documents such as invoice copies from the suppliers, thus eliminating the documentation of extra invoice copies. The paper size of skid label was reduced from A4 to A5 and Kanban

Label from 4/A4 to 6/A5 size papers. This helped to reduce 1750 sheets/day thereby saving 2.4 Ton of paper annually.

In the FY 16-17, we are planning to eliminate the documentation of invoice copies and skid labels by incorporating the OTS – Order Tracking System and using only Kanban label. We are aiming to achieve paper reduction of 3000 nos./day which would result in saving 4.1 tonnes of paper annually.

Five Year Environment Action Plan Status (FY2009-15)



III. ESTABLISH SOCIETY IN HARMONY WITH NATURE

Society resides on the strong foundation of natural environment, cultivated and inherited by our ancestors; it is our duty to pass on the same to our future generations. As Biodiversity and Ecological balance go hand in hand, it is our primary responsibility to conserve our nature for a sustainable future. The following activities are initiated by us, to establish society in Harmony with Nature.

Afforestation Activity

TKM initiated afforestation drive in the year 2009, as a part of sustainable projects. Our afforestation initiative is based on concept of Dr.Miyawaki Method, where the restoration and reconstruction of forests is based on potential natural



BIO-GASIFIER UNIT



SLUDGE DRYING YARD



RAINWATER HARVESTING POND

vegetation which helps in growing the forest at the rate of 1 m/year by planting native species of the area to create biodiversity and food chain.

Area of 144 acres (1/3rd of our total land area) is reserved for development of greenbelt. We have developed theme based forests in the premises by creating an ecosystem of native, rare and endangered species, timber yielding plants, medicinal and aromatic plants and edible fruit yielding plants.

Till date, more than 2, 52, 000 saplings are planted inside the greenbelt area. We are aiming at creating ex-situ conservation of various native species which are listed in IUCN's list.

Biodiversity at Toyota

Biodiversity has an intrinsic value to itself. It protects the diverse form of species to benefit from each other and maintains the ecological balance which sustains human livelihood and life on earth.

TKM is located in Bidadi Industrial area, which is identified by the Karnataka Industrial Area Development Board [KIADB], which is a competent authority to allocate areas for industrial purposes. As there are no ecological sensitive areas surrounding the earmarked area, no habitat changes are attributed to our operations.

With an objective of understanding species composition & its distribution inside the campus and in the neighborhood (5km radius), Biodiversity experts were engaged for the study. Survey was conducted during all 4 climatological season in the region and both flora and fauna were recorded. Experts arrived at a conclusion that there was not much difference between species diversity within and the neighboring community.

The study results are set as baseline for our afforestation initiatives, this will act as a tool to understand the impact of all our future projects designed to contribute to towards conservation.

Flora And Fauna at TKM

During the survey, 133 species of plants (apart from species introduced as part of green belt development), were found inside our premises and these belonged to 105 genera and 36 families. Out of 133 species there are 69 species were found to have medicinal properties. 173 species were found in the buffer area and they belonged to 136 genera and 51 families.

The survey also recorded 44 bird species, 38 species of butterflies, 9 species of reptiles and 6 species of mammals inside our premises.

Concept gardens established inside TKM

- Conservation of endangered plants
- Creation of Shrigandha Marg (Sandalwood trees lane)
- Fruit garden
- Medicinal garden/herbal garden
- Timber wood plantation

IV. ENVIRONMENT MANAGEMENT

Global EMS (Environment Management System)

Right from the day of inception, Toyota has put considerable efforts to reduce the negative impact of its operations on the environment. Consistent observation of the concerns on global environment and understanding the local prevailing conditions of all affiliates along with specific action requirements, lead to the formation of the Toyota Global EMS (Environmental Management System). An effective Global EMS is possible with the establishment of ISO14001. Two years of implementation period is provided after establishment, to achieve compliance to the system requirements and get certified with Global EMS.

Establishment of Global EMS at TKM has been a journey of learning with an objective of enhancing the robustness of EMS. We began with a self-evaluation in the year 2010 to



NURTURING NATURE AT TKM

identify the gaps in the system. A study showed an achievement of 84% conformance with the Global EMS. Continuous improvisations and enhancement showed 100% conformance for the first time during FY2012-13 audit. This year, we have been awarded with the title of 'Zero Non-Conformance'.

This year Plant 2 has confirmed for the requirements under Global EMS and emerged to be fully complying with the requirements with zero case of Major Non-conformance.

ISO14001 Certification

TKM subscribed to ISO14001 [Environmental Management Systems] in the year 2000 and has been certified by AJA [Anglo-Japanese American] Registrars, Thailand since 2001. TKM believes that ISO 14001 serves as a tool to improve environmental performance and comply with legal requirements.

In recent years, TKM has expanded its operations and has set up regional facilities in Pune, Manesar and Neemrana. The scope of certification is not just limited to the manufacturing facility but also extended to all Regional facilities and has been recertified in the year 2012.

A committee is created to drive the EMS which comprises of EMR (Environment Management Representative), Coordinator, Core Members and a Certified audit team having clear roles and responsibilities.

During the FY2015-16 numerous improvements were initiated, and these relatively strengthened the environmental management systems and set out a clear path for 'Zero Non-Conformance' during the Surveillance audit in June 2016. The initiatives included inducing Toyota Global requirements into ISO 14001 and enhancing the skill level of internal audit team through an external training program.



GREEN - ME

Inspiring Children for a Greener Tomorrow



TKM is relentlessly creating environmental awareness to individuals and community about the fragility of environment and our role in environment protection, which is of paramount importance.

Background

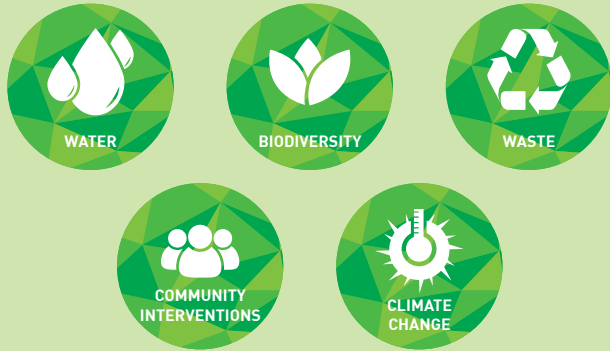
We have always initiated environmental activities and worked towards sustainable environment. Even though the Environmental initiatives were implemented on various occasions throughout the year, the need for continuous efforts to make Environment sustainable was felt. In line with this need, Green Me campaign was conceptualized to spread the TKM eco-spirit to community.

About Green-Me

The future of world lies with our children. They have all the rights to inherit the bounty of nature. Promotion of environmental awareness through education and active participation of children and community is imperative in the context of sustainable development.

With this idea, TKM conceptualized Curriculum plugged-in Environmental Education campaign "Green-Me" in the year 2015 to foster development of responsible environment attitude and commitment amongst students, teachers, parents & community. Centre for Environment Education [CEE] has been roped in as a strategic partner. Green-Me is composed of 5 thematic areas, which have been carefully selected to draw student attention towards both global & local environmental issues. Hands-on activities, case studies, action plan based projects, discussions and team activities have been designed under each theme to enable the student to appreciate the importance of environment conservation at a very tender age.

Green-Me Themes

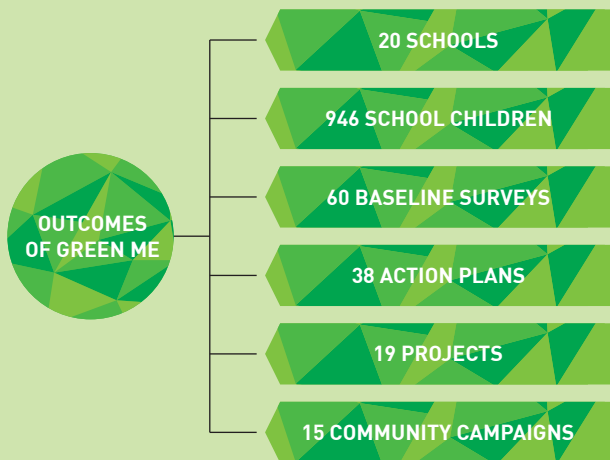


The Green- Me campaign gave a platform for all our TMs who truly care for mother earth and have a strong mind to create a difference not just in schools but also community on a whole.

School teachers and our enthusiastic volunteers worked together for 4 months in their respective schools reaching out to students and the neighboring communities to promote environmental awareness and made a difference in the communities, going an extra mile forward by successfully implementing their action plans.



CLEANING AND GREENING OF SCHOOL SURROUNDINGS



The Green-Me program was successfully conducted in 20 schools and the school children were trained on Environment concepts. Baseline surveys were conducted and based on these surveys, we took small step towards sustainable environment by establishing action plans and successfully planned projects and community campaigns to create awareness on waste reduction and resource conservation. This considerably increased the environmental awareness amongst the children and they are committed to spread awareness not only to their families but also to the neighborhood communities.

Currently we are involved in understanding the impact of campaign and enhancing the work for coming academic year. We are looking forward to take this journey from schools to neighboring villages.



ENVIRONMENT THEME BASED ACTIVITIES

ECO ZONE

An outdoor Environment Learning Center

We realized that 'Green Me Program' needs to be strengthened further to engage, involve and capture the imagination of all the students. A change in the educational setting would definitely motivate the children with new energy & fill them with vigor to learn and discover. Learning in an outdoor setting seemed like an option that could fill the void.

Through outdoor based environmental education, students will be capable of finding their voice through peer-to-peer interaction. The challenge is to create a curricular based learning center which provides learning on local & global environmental issues while fostering an attitude change in the minds of children.

Ecozone will also serve as knowledge sharing platform for our stakeholders.

Ecozone is an outdoor Environment learning centre which is carefully designed incorporating issues like:

- Curriculum linked education concepts
- Global & local facts related to pollution & degradation of environment.
- Approach towards solutions through technologies, concepts, designs etc
- Promote 'Attitude Change' by enabling students to think on "What I must do?"
- Practical exercises.

We believe, "the most significant intellectual achievement is not so much in problem solving, but in question posing."

The project area is spread over 25 acres inside the 432 acre campus of Toyota Kirloskar Motor's manufacturing plant.



TOYOTA ENVIRONMENTAL CHALLENGE 2050



Since its foundation, in 1937, Toyota has been consistently committed to the idea of contributing to society by manufacturing automobiles, and leading innovation through technology and creativity.

This spirit of challenge that stands up to change has been handed down to us today through the company's DNA. Looking forward, we would like to continuously contribute to the society through our business activities and to carry on being a company that our customers choose, that brings a smile to every customer.

To move toward a net positive impact rather than just trying to reduce negative factors to zero, Toyota has set itself six challenges. All these challenges, whether in climate change or resource and water recycling, are beset with difficulties; however we are committed to continue towards the year 2050 with steady initiatives in order to realize sustainable development together with society.

At COP 21 held last year, global participants reached an agreement to unite for the sake of mitigating climate change. We have recognized the necessity for working with futuristic targets to ensure a sustainable environment for coming generations. Thereby, we have announced 6 challenges that Toyota would meet by 2050 such as 'New Vehicle – CO₂ Zero Challenge' among the others. It will require a consolidated effort of all stakeholders with a belief that "it can be achieved".

CHALLENGE 1	CHALLENGE 2	CHALLENGE 3	CHALLENGE 4	CHALLENGE 5	CHALLENGE 6
New Vehicle Zero CO ₂ Emissions Challenge	Life Cycle Zero CO ₂ Emissions Challenge	Plant Zero CO ₂ Emissions Challenge	Challenge of Minimizing and Optimizing Water Usage	Challenge of Establishing a Recycling-based Society and Systems	Challenge of Establishing a Future Society in Harmony with Nature



<ul style="list-style-type: none"> Mileage Improvement of engine driven vehicle Promote development of next-generation vehicles with low CO₂ emissions HV, PHV, PCV, Electric vehicles 	<ul style="list-style-type: none"> Promote environmental friendly designs by choosing appropriate and less materials to be used to vehicles Adopt more recycling and biological materials for vehicle production 	<ul style="list-style-type: none"> Improvement of manufacturing technology Switching to different forms of energy such as renewable energy and hydrogen energy 	<ul style="list-style-type: none"> Comprehensive reduction of amount of water used Comprehensive water purification and returning it to earth 	<ul style="list-style-type: none"> Utilization of eco-friendly materials Marketing use of parts for longer Development of recycling technology Making vehicles from end-of-life vehicles 	<ul style="list-style-type: none"> Planting trees Environmental conservation activities in surrounding areas Environmental education
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TKM SIXTH FIVE YEAR ACTION PLAN

We are committed to protecting and improving the environment, so we need to be sure that all aspects of our business understand what is required of them and that we work together with our stakeholders to achieve our environmental goals. Our head office at Japan has always been ahead of the curve in terms of reducing environment impact from our operations & driving positive & greener future.

Utilizing the Sixth Action Plan guideline & the challenge 2050, we have deliberated with our stakeholders. Upon series of numerous discussions we could establish a landing position for our organization in India by 2020 from an environmental standpoint. By 2020, following are some of the key tasks lined up by TKM:

Manufacturing & Logistics Sub Committee:

1. Strengthening EMS through GEMS, LCM & ISO 14001:2015
2. Reduce environment KPI (CO₂, VOC, Waste & Water) by 6%
3. Invest in renewable energy & cleaner technologies to reduce carbon footprint
4. Minimise CO₂ emission & packing material in logistics by 5%

Service & Sales Sub Committee:

1. Promote the model dealer concept & develop self reliance among dealerships
2. DERAP confirmation & completion by 95%
3. Promotion of Eco Driving among Customers
4. Establish facility for recycling of vehicles & hybrid vehicle batteries

Purchasing Sub Committee:

1. Promotion of ISO 14001 certification among all suppliers
2. Chemical substance confirmation through IMDS (International Material Data System) for all suppliers
3. Supplier legal compliance management through TKM legal audit & sustenance
4. Carbon footprint reduction through resource conservation
5. Promotion of biodiversity and afforestation at suppliers

Communication Sub Committee:

1. Develop 'Green Wave Project' guidelines & implement with stakeholders
2. Initiate community project under 'Today for Tomorrow' involving reputed NGO
3. Promote 'Education for Sustainable Development' through Green Me & Ecozone Project
4. Establish communication framework to reachout to all stakeholders

GOING AN EXTRA MILE TOWARDS ENVIRONMENT RESPONSIBILITY

TKM has always strived towards Environment conservation throughout its journey so far. We have gone an extra mile to undertake third party independent verification on our company's environmental performance data.



For this, we engaged DNV GL to carry out the data verification using its verification protocol and performed work based on DNV GL's VeinSustain™. Environmental performance data covering the reporting period 2015-16 was verified, based on the principles of Completeness, Reliability and Accuracy.

DNV could assure our data, information and representation of performance data provided and some improvement points were identified, which were attributed to the transcription errors. At present, we are working to minimize the transcription errors and improve our overall performance.

ENVIRONMENT MONTH



BACKGROUND

Since its inception in 1974, World Environment Day [WED], which is marked annually on 5th of June, by the United Nations [UN], has developed into the biggest and globally most celebrated day for raising Environmental awareness and taking positive actions. It is a global platform to showcase the environmental issues and enables everyone to realize their role and responsibility to take care of mother earth. At TKM, June month is celebrated as Environment Month, although the environmental activities take place throughout the year.

We come up with a theme for the Environment Month celebration every year, in line with the global theme and the TMC guidelines.

Global Theme 2016



TKM Theme 2016

**TOYOTA ENVIRONMENT CHALLENGE 2050:
"LETS DO IT FOR THE FUTURE!"**

**SUSTAINABLE COMPANY IN HARMONY
WITH NATURE & COMMUNITY**

PROACTIVE
TKM Eco Drive

COLLABORATIVE
TKM Eco Drive

INCLUSIVE
Community

Be Proactive, Collaborative & Inclusive to, Establish a Sustainable company in Harmony with Nature and Community



World Environment Day (WED) Celebration

WED was celebrated at Ambedkar Bhavan, Ramanagara by school students along with KSPCB. Walkathon, eco - exhibition and environment conservation through cultural program were conducted by school students to spread awareness amongst the community.

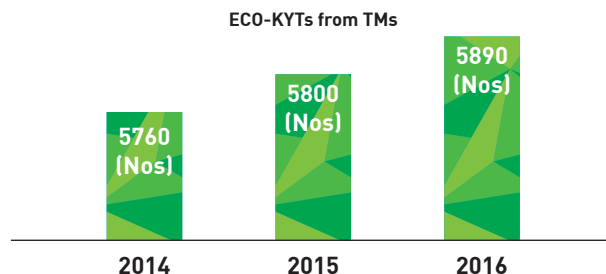


ECO-MINDACTIVITIES

The Eco-mind activities aim to create awareness through strengthening the training system by involving TMs in Environmental activities.

Daily KYT to Team Members

The Daily KYT [Kiken Yochi Training] is conducted to propagate the eco message to all the employees on global environment issues and its impact.



The promotional activities for the internal stakeholders included promotion through posters and danglers, intranet portal - I Share and Eco KYT and oath by all employees.





Environment Awareness to Dealers

We utilize all opportunities, to create awareness amongst our stakeholders regarding the Environment. During the Dealer Counsel Sub Committee [DCS], which was conducted by CSG department of TKM, topics on Environment protection, Carbon footprint, legal compliance and water conservation were discussed and the members committed for proactive participation in Water conservation.

The 'Global Environmental Mission 2050' was also discussed in the Dealer Business Meet [DBM].

In addition, the CSG department evaluates and uploads the feasible ideas for the dealers to implement.

ECOPHOTOGRAPHY

This competition motivated TMs to identify the environmental issues and promote awareness on Biodiversity conservation. It aimed at providing a platform to our people to showcase beauty of nature and their environmental concerns. The photographs also act as messages to spread environmental awareness. Theme – "Lets save Biodiversity for the future"



We have established a web portal called 'New Connect' for the Dealers to share the Eco-initiatives. Kaizen library is created to enable the upload and download of Eco-ideas shared by other dealers.

Green- Owledge , the ECO Seminar

Eco-seminar is conducted every year for our employees to develop eco-mind and to create awareness through the approach of 'Involve & Educate'. The topic for discussion included 'How to lead an Eco-friendly Lifestyle'- Learn from the experts. The discussion was helpful in understanding herbal home remedies, use of medical herbs to cure the ailments, organic farming at home – 'Oota from your thota', methods and types of organic farming and healthy way of living by using organic products.

About 200 participants attended the seminar. It evoked a lot of enthusiasm and environmental awareness amongst the participants.



ECO SHORT FILM

The Eco short film contest was started to have a visual conversation with the TMs by motivating employees to make eco-documentary which would highlight the current environmental sensitive issues, our role in mitigating the concerns and ideas for eco-friendly living. It served as a platform to utilize new technological trends and enhance innovativeness through motion pictures.

ECO KAIZEN ACTIVITIES

Eco kaizen activities are promoted to identify the improvement areas in different divisions by the TMs. The Eco kaizen activities are enhanced through focused activities on reducing resources, carbon footprint, energy consumption & hazardous waste, implementation of Swachh shop activity (zero part fall) and innovative technical kaizen. This reporting year we received more than 800 kaizen suggestions from our employees in both Plant-1 and Plant-2 and almost 80% of the kaizens are implemented.

ECO SHOWCASE ACTIVITIES

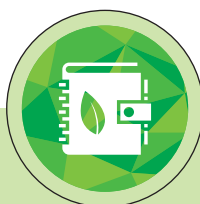
Eco showcase provides platform for the TMs to involve the local community for proactive participation in social activities thereby contributing to the environment and as well as the community.

CORPORATE ECO FAMILY

Environment month was an opportunity for TMs to educate and involve their family to communicate TKM's eco-spirit to the society. Our TMs involved in campaigns for promoting environmental awareness on resource conservation, tree plantation (afforestation) drives and clean up drives.

ECO CSR ACTIVITIES BY TMs

Volunteer team members promoted various Eco CSR activities in the local community. More than 200 TMs took part and major activities driven were Plantation at Schools & Villages, Swachh Bharat campaign, Switch-off at signals campaign, Say No to Plastic, Cyclothon, Eco-competitions to school children and Promotion of waterless car wash. The objective of this activity is to sensitize the minds of our TMs towards social responsibility and ownership



ECO DAIRIES

KAIZEN: ELIMINATION OF HAZARDOUS CHEMICALS BY INCORPORATION OF ECO FRIENDLY ORGANIC CHEMICALS

Theme: Minimize "Hazardous Chemical waste"; Minimize health risk & Environment risk

As a step towards creating greener and safer workplace, our TMs identified that the inorganic chemicals used in the paint shop could be eliminated and replaced by Eco-friendly organic solutions, as the inorganic solutions are known to be hazardous by virtue of their constituents and may cause detrimental effects on the employees handling them.

Based on the detailed analysis, a priority list was established and the inorganic solutions used for cleaning at the paint shop were targeted for change-over. This promoted the Expert team at TKM to work with a specialized chemical developer for a unique, effective organic solution. The team worked together and understood the process of paint stain removal and an eco friendly organic solution was developed which was successful in removing the stains. The residues formed after the cleaning were also organic in nature, thereby, eliminating the risk of causing impacts on the environment as well the employees handling them.



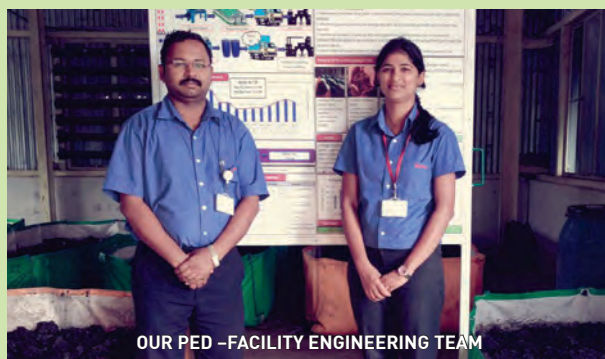
Special appreciation by Mr. Horinouchi (DMD-TKM)
Innovative Environment Solution Awarded by DMD

KAIZEN : ALTERNATIVE ECO-FRIENDLY TECHNIQUE FOR WASTE MINIMIZATION

As a part of TKM's ambitious venture towards achieving Zero Waste to Landfill, our PED facility team initiated a kaizen to minimize the biodegradable waste, bio-sludge coming out of the sewage treatment plant by adopting the eco friendly technique of vermicomposting.

This technique converts the biodegradable waste (Non-Hazardous) into manure and has helped us reduce the costs of landfilling and curbed the CO₂ emissions upto 18t/annum. the vermicompost is used in our premises for the gardening purposes and is also supplied to the Bidadi Industrial Association for sapling plantation.

Our PED –facility Engineering team has achieved No.1 Gold Award among 57 Eco Kaizens from Asia pacific affiliates for TKMs Bio-sludge Kaizen. Further, the same is submitted for TMC Global Environment Kaizen Awarding Evaluation.



OUR PED –FACILITY ENGINEERING TEAM

Vermicomposting Kaizen wins – Asia Pacific Environment Kaizen Awarding for the year 2015-16 [APEKA]

GREENING THE SURROUNDINGS

As an Eco-conscious citizen, Mr.Raghavendra A.S. from Weld shop, Plant-1 took an initiative towards plantation drives in the year 2010 with an aim of creating awareness about environmental conservation to the neighboring communities. He is constantly involved in conducting plantation drives to expand plantation area and also has taken huge responsibility of their maintenance on yearly basis. He has not only motivated his family and friends but also promoted awareness to the neighboring communities regarding the importance of afforestation, environment and biodiversity conservation.

This initiative is a true example of Eco consciousness and commitment towards environment conservation. TKM recognized Mr. Raghavendra and his family for creating difference in the society, which is well appreciated and supported by the neighboring communities.



RAGHAVENDRA A S
TM No. 02000
P1 - Weld

- Plantation drive since 2010
- Awareness on afforestation
- Plantation maintenance on yearly basis



PLANTATION DRIVE

CONTRIBUTIONS FROM GREEN-ME VOLUNTEERS

Mr. Thimappa & Mr. Santhosh at Uragahalli school aimed at addressing challenge faced in neighborhood. A project was designed to address water crisis (water is concerned resource in the region). As a team they identified damaged water pipelines connected to individual houses. Volunteers along with School cabinet and with the support of Panchayat and community they ensured repair of entire water supply lines. This has resulted to ensuring zero fresh water wastage and also helped in providing water supply to additional houses.

Mr. Nagesh, Mr. Manu, Mr. Sharath, Mr. Pradeep, realized that boundary of GHPS at Bidadi is shared with neighborhood; causing difficulty in maintaining campus clean. Volunteers designed innovative awareness campaign and trained student groups. They could organize shows in and around the campus to spread awareness on environment and they were successful in ensuring Clean & Green school campus.

Mr. Prakash Guddanavar at GHPS, Ganakal took a challenge to ensure Zero Waste from the school. With the support of teachers and students waste management plan was formulated. The team was successful in establishing composting unit, water reuse system and kitchen garden. Science models created by students groups under his guidance were very special.



RECOGNITION OF BEST PERFORMING SCHOOLS & TKM VOLUNTEERS

AWARENESS ON WASTE MANAGEMENT TO COMMUNITY

Solid waste management is one of the major environmental problems faced by our Country today. This is majorly due to the inadequate facilities for collection, recycling and treatment of the waste and its uncontrolled disposal in dumps. In order to overcome this challenge, Mr. Shivakumar from Assembly repair shop of Plant-2, TKM, took up the responsibility of creating awareness amongst people about waste segregation and disposal of the solid waste in the designated bins. He has installed separate bins for dry and wet wastes in his surrounding area and motivated people to segregate the waste and not to dispose the waste in dumps, thereby keeping the surroundings clean.

As every Indian, Mr.Shivakumar has a vision of Clean India and has put efforts in promoting the Clean India campaign. This initiative was recognized by TKM and appreciated by the neighboring community



SHIVA KUMAR
TM No. 00737
P2 - Assy Repair

- Awareness on segregation of solid waste
- Provision of separate bins for wet & dry waste
- Clean India Campaign



CLEAN INDIA CAMPAIGN