



BHEL's Commitment In Support of U.N.G.C. Programme

Bharat Heavy Electrical Limited (BHEL), is an integrated power plant equipment manufacturer and one of the largest engineering and manufacturing company of its kind in India engaged in the design, engineering, manufacture, construction, testing, commissioning and servicing of a wide range of products and services for the core sectors of the economy, viz. Power, Transmission, Industry, Transportation (Railway), Renewable Energy, Oil & Gas and Defence with over 180 products offerings to meet the needs of these sectors.

As a Maharatna CPSE, BHEL is well aware of its responsibility towards environment and sustainable development and the same is evident from its mission statement- ***"providing sustainable business solutions in the fields of energy, industry and infrastructure"***. BHEL's equipment boast of world class performance attributes like, lower auxiliary power consumption, superior boiler efficiency, better plant heat rate & plant load factor (PLF) and finally lower life-cycle cost. Customers of BHEL, while remaining profitable, are able to serve the nation in accordance with prevalent and acceptable social and ecological standards.

All manufacturing units / divisions of the company are accredited to latest international standards viz. ISO-14001 certification for Environmental Management System (EMS) and OHSAS – 18001 certification for Occupational Health and Safety Management Systems. The organization has also enunciated its policy on Sustainable Development.

BHEL has continued to play a prominent role in the United Nation's Global Compact (UNGC) Programme by promoting the core values on human rights, labour standards, environment and anti-corruption and intends to advance these principles, which are embedded in its strategies & culture, within its sphere of influence. The company publically advocates UNGC principles to its Stakeholders through Annual Report, Press Conferences and other public communiqués.

BHEL's performance on each principle of Global Compact for the year 2014-15 is hosted on UNGC website and also available on company's website www.bhel.com.

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(R Krishnan)

BHEL Performance 2014-15 – Global Compact Principles

Human Rights

Principle 1): Business should support and respect the protection of internationally proclaimed human rights

BHEL policies are in line with the principles of Human Rights, The Constitution of India, the various Labour Laws, etc. BHEL has special provisions for ensuring safeguard of women employees at the workplace. The principles of Natural Justice are enshrined in “The BHEL Conduct, Discipline and Appeal Rules” applicable to all its employees except workers who are governed by the Standing Orders

Principle 2): Make sure they are not complicit in Human Rights abuse

No instance of Human Rights abuse has been reported in the Company.

Labour Standards

Principle 3): Businesses should uphold the freedom of association and the effective recognition of right to collective bargaining

The Government of India has enacted various labour laws to adequately protect the interests of the working class. These laws are strictly adhered to in BHEL. BHEL units/divisions are required to submit quarterly reports on compliances of different laws to the Board of Directors. This is done to ensure that the interests of the workers are protected.

Apart from this, BHEL has various bi-partite fora for workers, where the issues / problems pertaining to the workers are discussed and settled. BHEL also has an apex level bipartite forum namely “The Joint Committee for BHEL” wherein the elected representatives of all units of BHEL, along with the Central Trade Union Organizations, to which the Unions are affiliated, are represented from the workers’ side whereas the Management is represented by Chairman & Managing Director and Functional Directors along with the Heads of units.

As part of our efforts to take the participative culture to a higher pedestal, BHEL has been organizing “Workshops” related to various themes namely Productivity, Organizational Excellence etc. BHEL has been regularly organizing “Special Sessions” of Joint Committee in Workshop format. During these workshops employees are sensitized about the challenges being faced by the Company and strategies being framed to meet the challenges and commitment to customers. Syndicate Groups are formed on various topics of interest both to the workers as well as the Company like Strengthening of Participative Fora, percolation of discussions in the Joint Committee to Plant level, Multi-skilling, Redeployment, Effective Utilization of Critical Machines, Enhancing the Productive Time

of Man and Machine, Reduction in Rejection and Rework, Maintenance and Upkeep of Machines, Three shift working, Enhancing Productivity of Employees, Dissemination of Company Information, Cost Cutting Measures at workplace and Wastage Control, Improving Quality and bringing Quality Consciousness among employees, Reduction in Cycle Time, Sequential Supplies from the Units, Expectations from the Workers/ Unions in the Present Business Scenario, Imbibing the Work Culture of BHEL, Improving Employees Engagement, Mentoring and Coaching for Bridging the Skill Gap & Developing New Skills, The Role of Trade Unions in Motivating Employees at Work Places, Balancing the Manpower Cost vis-a-vis Employee Productivity and Project Implementation issues.

At the unit level, there are bipartite committees like the Plant Council & Shop Councils which meet regularly and discuss issues related to Production in Financial & Physical terms, Productivity, Order book, Cash collection, Despatch, General Administration and Discipline etc. The Plant Council as well as the Shop Councils have representation from all categories of employees. Suggestions on Cost Reduction, ways to meet the Production Targets, Sequential Deliveries and Quality of goods are welcomed. Suggestions received are evaluated and those found to be good and feasible are considered for implementation. The involvement of all the cadres in the workshop has had a positive impact on the working in the Unit. In addition, at the Unit level, workshop are organized wherein the themes of the workshop are generally related on how to deal with the Unit specific issues. Such workshop have not only resulted in better organizational climate but have also brought together the various categories of employees in resolving the various issues.

Principle 4): The Elimination of all forms of forced and compulsory labour

The Company neither subscribes to nor indulges in such coercive practices. Towards this, it never asks its employees to deposit their original documents pertaining to their education qualifications or Date of Birth.

Principle 5): The Effective Abolition of Child Labour

As per BHEL's Recruitment Policy, the minimum age for employment in the Company is 18 years. No person below this age can be employed in BHEL, thereby ensuring that child labour is not employed in BHEL.

Principle 6): Eliminate discrimination in respect of employment and occupation

Uniform set of rules are mentioned in "The Personnel Policy" of BHEL, which apply equally to all employees, irrespective of factors such as sex, caste, religion, race etc. All recruitments are conducted in a transparent and impartial manner, giving equal opportunity to all eligible candidates, without any discrimination whatsoever.

Environment

Principle 7): Businesses should support a precautionary approach to environmental challenges

As a Maharatna CPSE, BHEL is well aware of its responsibility towards environment. Our commitment to environment especially with regards to precautionary approach is manifested in our efforts towards reducing - material, water & energy consumption, emission and waste generation and simultaneously recycling of reusable waste generated in our premise including effluent and raw materials. Overall more than 70 projects have been taken across various units of BHEL in 2014-15 related to reduction/recycling/reuse of waste with an objective of reducing use of virgin material and consequently reducing the environmental footprint of BHEL.

All major manufacturing Units and power Sector regions of BHEL have well established Environment Management Systems (EMS) accredited to international standard ISO 14001: 2004. The organization has a corporate HSE Policy based on which all our units and regions have derived their own HSE Policy. The HSE management system provides us an excellent framework for addressing **environmental risks** proactively by systematically identifying and ensuring compliance of applicable environmental, occupation health and safety related rules and regulations and drives us towards continual improvement in the system. Periodic audits are carried out by the certifying agencies to ensure effective implementation of the established system, including legal compliance. All applicable environmental consents & licenses are maintained and their terms & conditions are complied with. As per the applicable statutes, the Environmental Statement showing related environmental compliances are submitted to the respective State pollution Control Board by all the manufacturing units by September every year for the preceding financial year. The Units regularly update their licenses as per statuette.

Regular monitoring of the flue gases of the boiler & gas plant furnaces is carried out and pollution levels are maintained below the permissible limits. Ambient air quality at different areas in factory are monitored and measured regularly. Similarly, the discharges from the factory are treated, reused, recycled and only then drained. Company further stresses the conservation of oil, water and energy etc. Waste and hazardous materials are handled and disposed through authorised agencies.

Principle 8): Undertake initiatives to promote greater environmental responsibilities

For BHEL, sustainability is about achieving prosperity by balancing social equity and staying within the tolerable limits / carrying capacity of the environment. At BHEL, we believe in doing business in a sustainable manner that extends across the spheres of our Business strategy, environmental action, social support and governance. Sustainability has been just a natural extension of the way BHEL saw itself and its responsibility. For almost fifty years of its existence, company has been leveraging technology and

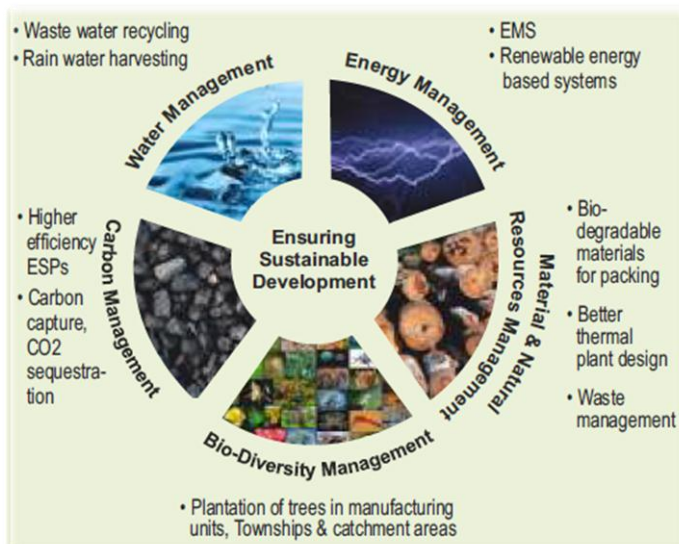
innovation for providing products, systems and services to its customers and enable them to use resources with better efficiency and productivity which is also evident from its Mission Statement – **“Providing Sustainable Business solutions in the fields of Energy, Industry & Infrastructure”**.

Structured approach towards sustainability is in itself a value proposition which adds to the triple bottom line. This helps us in reducing - material, water & energy consumption, emission and waste generation; providing more acceptability for our operations in the society; and making our products & services more sustainable and profitable. It also enables us to contribute towards equitable development as a central theme so that the benefits of economic and business growth can reach to the maximum populace.

8.1 Sustainability framework

Any successful initiative requires being loaded with enabling structures right from the beginning. For sustainable development, a guiding force has also been created in the form of a ‘Sustainable Development Policy’ keeping in view the scale and nature of activities, products & services.

The policy is further ingrained and reflected in the strategy of the company through its Strategic Plan 2012-17. The focus areas have been identified for ensuring sustainable Development in BHEL through its products and services as well as in-house activities.



Key projects & initiatives are undertaken in the areas of Renewable energy generation through Solar Power Plants & other solar systems, tree plantation, water conservation, energy efficiency, workplace environment improvement by installing Fumes Extraction Systems, Noise Level Reduction Systems, Resource Conservation Systems.

8.2 Responsible Consumption of Natural Resources and Other Materials.

There is continued stress on conservation and effective utilization of various natural resources in manufacturing activities and at project sites.

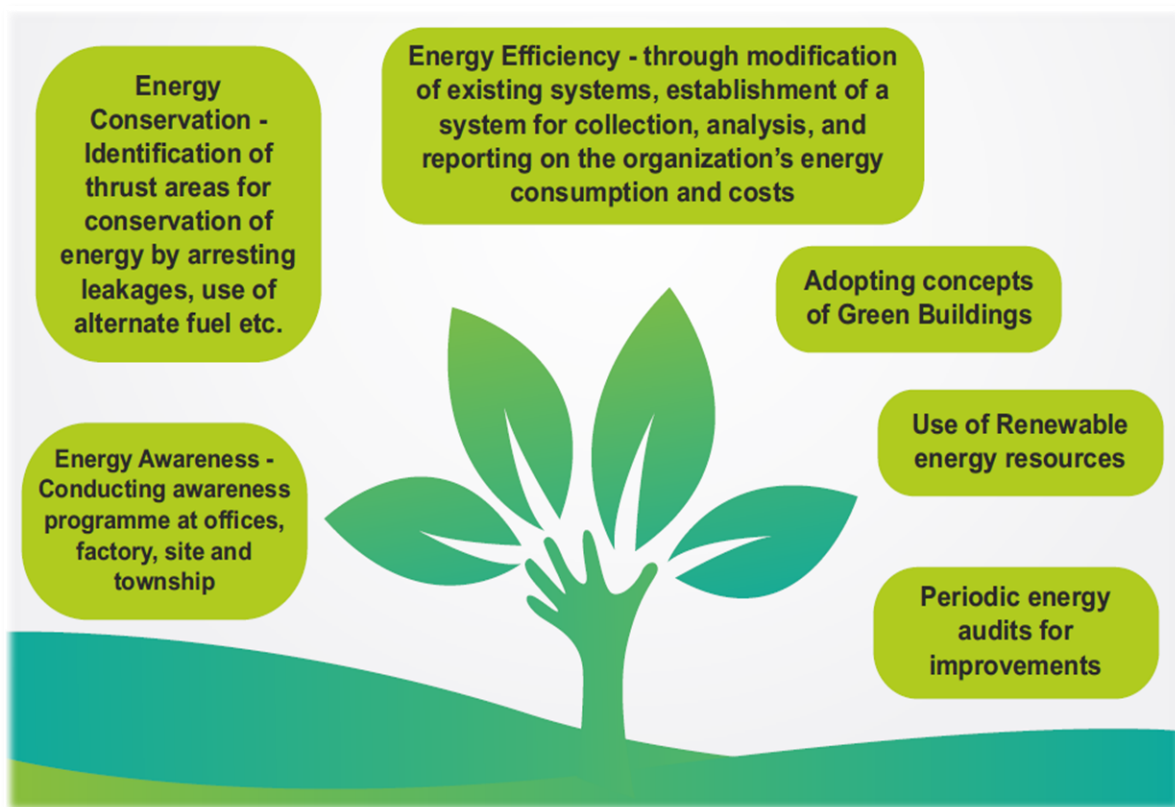
Waste minimisation is one of the key focus areas of BHEL under Sustainable Development. The Company has a strong institutionalized mechanism to recycle the products and wastes to the extent feasible. For example, each MT of the molten steel produced at our CFFP unit contains 54% of the recycled scrap (of CFFP) and 45% of MS Scrap (from other BHEL units), thus making it an almost a 100% recycled product.

Some of the activities related to material and natural resource management carried out during 2014-15 include:

❖	Bhopal Unit: Recycling of cutting fluid [coolant] used in machining.
❖	HPEP Unit, Hyderabad: Recycling of Ferrous and non-ferrous scrap, enhancement of shelf life of paint through additives and fabrication of a 20MT Gantry Crain using waste material.
❖	TP, Jhansi: Use of oil skimmer for collection of waste oil from drainage water.
❖	PPPU Thirumayam: Development of Hydraulic and lubrication oil reclamation system.
❖	PPPU Thirumayam: Reuse of 200 MT cut bit steel pipes as raw material
❖	EPD Bengaluru: Recycling of fired-rejected insulators for making Grog granules which is used in CAP & Disc shell assembly in manufacturing process.
❖	HEEP Haridwar: About 31MT of used /waste oil has been recovered from coolant recovery system and with the help of oil skimmers fitted on main waste water drain.
❖	HPEP Hyderabad: Recycling of 368.5 MT of MS Scrap and nearly 30% reduction in paper usages.





8.3 Managing energy requirements at workplace

As the country grapples with shortages of electricity, it is imperative that industries need to consume energy in a more responsible manner. BHEL being a major supplier of power plant equipments is very much aware of its social responsibility towards making a conscious efforts in moving towards use of sustainable energy mix in its operations. Thus, thrust on energy conservation and energy efficiency is identified as strategic business need. Use of renewable energy [solar power] in our manufacturing activities is gradually going up on account of generation of solar energy.



Focus areas of energy conservation / efficiency efforts in BHEL

Thrust areas in BHEL pertaining to generation/ use of Renewable Energy are:

	Installation of Roof Top Solar PV Systems
	Installation of Solar Water Heating Systems
	Installation of Grid interactive SPV Power Plant (sub MW and MW scale)
	Installation of Solar Street light

BAP Ranipet unit is the first unit to install a 5 MW_p grid interactive solar power plant which has generated nearly 6.23 Million Units of green electricity during 2014-15 resulting in mitigation of carbon Footprint to the extent of 5600 MT CO₂-e additionally. A 1.5 MW_p solar power plant is also under installation at our Hyderabad unit.

Some of the activities pertaining to energy efficiency / conservation and renewable energy undertaken during 2014-15 include:

<ul style="list-style-type: none"> EPD Bangalore: Usages of Variable Frequency Drive (VFD) for Kiln motors
<ul style="list-style-type: none"> Trichy unit: Installation of 2 X 50 KW_p rooftop grid connected solar PV plant and 80 nos. 40W Solar powered LED street lights
<ul style="list-style-type: none"> HEEP Haridwar: Replacement of 700 M² of metallic roofing sheets with transparent Polycarbonate sheets at selected locations for better natural lighting & conservation of energy

- HPEP Hyderabad: Installation of 50 nos. Solar Street Lights in factory area and more than 100 LED lamps
- PPPU Thirumayam: Installation of 20 nos. of 36 W LED Street Light with Solar PV Modules

8.4 Managing Water & Bio-diversity within Our Premise.

At BHEL, water and wastewater systems are sustainably managed to meet the needs of a growing community through emphasis on recycling and reusing of water at workplace. In line with the India's National Water Policy 2012 which lays emphasis on water recycling & reuse and Zero Liquid discharge (ZLD), many of our units are already ZLD and others are taking steps in that direction. Some of the activities undertaken in 2014-15 for water management include:

- Bhopal Unit: Creation of rainwater recharge pond near Gadia.
- IVP, Goindwal: Modification in existing sewage disposal system and installation of 100 KLD capacity sewage treatment plant.
- EPD Bengaluru: Recycling of Ceramic Insulator trade effluent and reusing it for pebble washing, filter press cloth washing, Patas washing and gardening.

With respect to its concern for environmental protection and soil conservation, BHEL has undertaken afforestation activities such as mass tree plantation and development of green belt which has resulted in development of nearly 4.7 million M² of green coverage and plantation of more than 3 million trees till date. As a result ambient temperature in our township is generally 1°- 2° lower as compared to areas in their vicinity. Some of the activities undertaken for afforestation in our units during 2014-15 include:

- Trichy Unit: Development of Golden jubilee Biodiversity Park "Vanavil".
- Bhopal Unit: Plantation of 8000 trees and development of 800 M² green cover.
- HPEP Hyderabad : Tree planation by all superannuating employees 1000 Nos.
- Power Sector Northern Region: Tree plantation at Bara and Lalitpur project sites.

8.5 Emissions and Carbon Management

BHEL units have initiated quantification of relevant gaseous emissions. However, the emission level of NO_x, SO_x, SPM & other significant parameters are well within the limits prescribed by respective State Pollution Control Boards. Monitoring and control of emissions from boiler & gas plant furnaces are undertaken regularly to maintain pollution levels below the permissible limits.



Golden jubilee Biodiversity Park "Vanavil" in Trichy Unit

BHEL has avoided a carbon foot-print of 2410 MT CO₂-e due to various energy efficiency measures and generation/use of renewable energy. Additionally a 5 MW_p capacity grid interactive solar power plant at BAP Ranipet has helped in avoidance of carbon Footprint to the extent of 5600 MT CO₂-e during 2014-15.

In addition to generation of renewable energy at our premise, the usages of cleaner fuels is also one of the factors which is helping us in mitigating our carbon footprint. Our EPD Bangalore unit have stopped using LPG completely and switched over to natural gas (RLNG) which is safer and is having negligible emission to atmosphere in December, 2014. HEEP Haridwar unit has switched over to natural gas from producer gas. Also CFFP Haridwar unit has converted Oil-fired burners to Natural Gas fired burners.



5 MW_p Solar power Plant in BAP Ranipet and TNEB 11 KV Grid system for power evacuation

8.6 Sustainable Development – our commitment

The concept of sustainable development is inculcated in the DNA of BHEL which is evident from its mission statement- “providing sustainable business solutions in the fields of energy, industry and infrastructure”. The future is filled with both exciting opportunities & grueling challenges. With the golden legacy of 50 illustrious years on its side, BHEL has embraced this business dynamism by expanding its offerings and enhancing competitiveness seeking to realize its long term vision and stay relevant with the changing times. With its committed workforce and enabling framework in place, BHEL is poised to move ahead towards the journey of Sustainability with more vigor.

Principle 9): Encourage the development and diffusion of environment friendly technologies

BHEL is sensitive to the fact that, globally, power sector currently accounts for 41% of energy – related CO₂ emissions. BHEL believes that decarburising power sector will be at the heart of our efforts towards extensive reduction in global CO₂ emissions.

The company has always been a torchbearer in these endeavours for the industry in India. BHEL initiated Coal Research Programme in the late seventies to develop technologies for efficient utilization of Indian coal and minimising its environmental impact. With 500 MW sets in 1984, 660 MW and 800 MW sets in 2008, and 700 MW in 2010, BHEL has been progressively introducing environment friendly and fuel efficient technologies for its customers. BHEL also brought CFBC for burning multiple fuels, HRSG for absorbing waste heat and IGCC for coal gasification technologies to India.

Today, BHEL's equipment boast of world class performance attributes like, lower auxiliary power consumption, superior boiler efficiency, better plant heat rate & plant load factor (PLF) and finally lower life-cycle cost. Customers of BHEL, while remaining profitable, are able to serve the nation in accordance with prevalent and acceptable social and ecological standards. During 2014-15, BHEL built thermal sets continued to demonstrate efficient &

superior performance. 27 sets registered Plant Load Factor (PLF) of over 90 % and 77 sets between 80%- 90%. Significantly, 183 BHEL built coal – based sets achieved an Operating Availability (OA) of more than 90%. Accelerating its project execution momentum as part of its six point agenda for dynamic growth, BHEL has surpassed the capacity addition target, set by the Government for utility projects, by 19%.

BHEL which ranks among the highest R&D spenders in the country in engineering and manufacturing segment spent 3.26% of turnover on R&D (₹ 10.06 Billion) in 2014-15 compared to 2.78% in 2013-14. Increased R&D effort have led to filing of highest ever 450 patents / copyrights during 2014-15 and a turnover of ₹ 7.278 Billion from in-house developed products and services.

Some of the efforts through which the company has contributed towards development and diffusion of environmentally friendly technologies during 2014-15 include:

- Commissioning of - first indigenously manufactured 660 MW supercritical thermal set at NTPC Barh, first indigenously manufactured 800 MW supercritical boiler at Krishnapatnam
- Commissioning of 6 hydro sets aggregating to 736 MW, accounting for 100 per cent of the hydro power capacity addition in the country during fiscal 2014-15. Notably, this is also the highest hydro capacity addition in a single year by BHEL in the last decade. The feat was achieved by successfully commissioning projects of three major Central utilities - NTPC, NHPC and SJVNL
- Signing of an MoU with HSL & MIDHANI and formed a consortium for P 75I submarines- a stepping stone towards indigenous submarine building programme
- As part of its endeavour to offer the most contemporary products & technologies to customers, BHEL has indigenously designed and developed a breakthrough Fuel Flexible Boiler design capable of firing both imported & indigenous coals (in wide range of combinations)
- Supplying 50 MW_p of SPV modules in a single year including commissioning of 15 MW_p at NTPC Singrauli and 5 MW_p at NEEPCO, Monarchak during 2014-15

Further, BHEL has established 14 Centres of excellence:

At Corp R & D, Hyderabad:

1. Simulators
2. Computational Fluid Dynamics
3. Permanent Magnet Machines
4. Surface Engineering

5. Intelligent Machines and Robotics
6. Machine Dynamics
7. Compressors & Pumps
8. Nano-technology
9. UHV Laboratory
10. Advanced Transmission Systems
<u>At Electronics Division, Bangalore:</u>
11. Power Electronics and IGBT & Controller Technology
12. Control & Instrumentation
<u>At High Pressure Boiler Plant, Trichy:</u>
13. Advanced Fabrication Technology
14. Coal Research Centre

BHEL has also established four specialized institutes, viz., Welding Research Institute (WRI) at Tiruchirappalli, Ceramic Technological Institute (CTI) at Bangalore, Centre for Electric Traction (CET) at Bhopal and Pollution Control Research Institute (PCRI) at Haridwar. Amorphous Silicon Solar Cell plant at Gurgaon pursues R&D in Photo Voltaic applications.

All these efforts of BHEL is directed towards development and diffusion of technologies which are having reduced environmental footprints.

ANTI-CORRUPTION

BHEL believes in the highest levels of personal and institutional integrity. The Value Statement of the Company calls for the highest ethical standards to be observed in decision making and demonstration of the same in an honest, decent and fair manner. The Company has zero tolerance approach towards all forms of corruption. BHEL is committed to enhancing transparency in all its business dealings for which it has a Vigilance set-up in place to prevent irregularities.

Preventive vigilance remained the focus area of BHEL Vigilance, with special emphasis was on systemic improvements. To strengthen the vigilance administration, Whistleblower Policy of the company was issued. Further, action was initiated for review of Works policy, Works Account Manual and HR Manual.

Public Awareness is an important cornerstone for good governance. An enlightened employee not only can contribute in achieving the organizational goal but also in system improvements. Training programmes / sessions were conducted to update employees about Company's policies, rules and procedures in various BHEL Units and Regions. In

addition, interactive sessions were held with line executives representing different functional areas to sensitize them about the risk prone areas.

With a view to create awareness about procurement and works policy, rules and procedures etc., to disseminate the instructions/ guidelines issued by CVC and Government of India from time to time and to share best practices and case studies, a quarterly e-Newsletter '**DISHA**' is being published by Corporate Vigilance.

Interactive sessions/discussions on the theme 'Combating Corruption – Technology as an enabler', were organized at Corporate Office and in Units/Regions. Lectures and interaction with various eminent personalities, expert speakers on relevant topics varying from RTI, Fraud Risk Management to Ethics and Values etc. were also organized across the organization during Vigilance Awareness Week.

Routine / Surprise Inspections were carried out by Unit / Corporate Vigilance to verify the compliance of rule and procedures. Instructions/Guidelines were issued concerning following issues for further improvement in the system:

a) Deficiencies in Tendering Process of Transportation Contracts.
b) Clarification on clause 4.0 of Guidelines on Suspension on Business Dealings with Suppliers / Contractors
c) Prequalification Criteria (PQ)
d) Receipt and Opening of Tenders
e) Deficiency in Quality Inspections
f) Reasonableness of Rates

BHEL is committed to bring transparency in day to day operations of the Company by leveraging technology. The information regarding procurement related matters like status of purchase orders and Contracts, Vendor registration along with their current status is hosted on the Company web site. In addition, e-tendering route is being promoted for procurement and e-payment system has been implemented to reduce vendor interface. Further, steps have been taken to promote e-procurement in the Company.

BHEL has prepared a detailed Corruption Mitigation Action Plan in respect of potential areas of corruption, which has been taken up for implementation by all Units.

The organization has signed 'Integrity Pact' with Transparency International. The intention is to make public procurement and contracting more transparent by binding both the parties to ethical conduct. This would enable a monitoring role for civil society - the ultimate beneficiary. For high valued tenders, Independent External Monitors (IEMs) have been nominated for examining the complaints received against a tender and give their recommendation to the Management.

As part of Company's endeavor to set high standards of integrity, the Company has enforced its Conduct, Discipline & Appeal Rules.