



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

Bharat Heavy Electricals limited (BHEL), a Government of India enterprise, is the largest engineering and manufacturing enterprise of its kind in India and is one of the leading international companies in the field of power equipment manufacturing.

BHEL is an environment friendly company in all its activities, products & services, besides providing safe and healthy working environment to all its stakeholders. All manufacturing units / regions 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.

The company reiterates its commitments to United Nation's Global Compact (UNGC) Programme and intent to advance UNGC Principles within the company's sphere of influence and has ingrained it in its strategy, culture and day-to-day operations.

The company publically advocates UNGC principles to its Stakeholders through Annual Report, Press Conferences and other public communiqués.

BHEL has also taken a lead role in promoting UNGC principles in other Indian Organizations through Global Compact Network by organizing case studies / organizational experience sharing & addressing the Global Compact principles in Indian Context.

BHEL's performance (2012-13) on each principle of Global Compact is also available on Company's web site (www.bhel.com) uplinked to UNGC website.

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(R Krishnan)

BHEL Performance 2012-13 – 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 employee at the workplace. Principles of Natural Justice are enshrined in “The BHEL Conduct, Discipline and Appeal Rules” which are applicable to employees and “Standing Orders” which are applicable to workers.

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” 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. During these workshops employees are

sensitized about the challenges being faced by the Company and on evolving strategies to meet the challenges and customer commitment. BHEL has organized four special sessions of Joint Committee in Workshop format during the years 2004, 2006, 2008 & 2011. Syndicate Groups were formed on various subject of topical interest both to 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, and Sequential Supplies from the Units.

At the unit level, open forums and meetings of Plant Council & Shop council are held wherein issues related to Production in financial and physical terms, Productivity, Order Book, Cash Collection, Despatch, General Administration and Discipline etc. are discussed amongst the participants from all categories of employees. Suggestions on cost reduction, meeting the production targets, sequential deliveries and quality of goods are accepted which are evaluated for implementation. The involvement of all the cadres in the workshop has had a positive impact on the working in the unit.

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. In fact, BHEL is "Zero Tolerance" company regarding employment of child labour.

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**

BHEL is committed to be an Environment friendly company in all its areas of activities, products and service, providing safe and healthy working environment. In line with the company's strategy, Environment Improvement Projects (EIP) and Community Development Programmes are given special thrust. Some of the major EIPs executed in the past at BHEL manufacturing plants and townships included tree plantation drives, installation of rain harvesting plants, efficient water and energy management, reduction in noise level, improvement in chemical storage and handling systems etc.

In conformity with its commitment towards environment conservation, the company has taken up a number of Environment Improvement Projects (EIPs). These projects helped in enriching the environment, conservation of precious resources like energy, water, fuel, oil, coolant, lubricant, mitigating environmental pollution. As a part of major EIP / Sustainable Development projects during 2012-13, the company has planted more than 20,000 trees and successfully completed the Water harvesting project in several units. Further, in keeping with the commitment to use renewable power in units, the company has installed 250 KW Solar power plant at Bhopal unit and Roof Top Solar power plant of 20 KW_p at Trichy unit in 2012-13. Company also installed more than 1000 Turbo ventilators across its units to encourage energy conservation and as a part of Energy Efficiency more than 20 energy efficiency projects were completed at the units under Sustainable Development Projects. Total expenditure incurred on these activities pertaining to Environment for the year 2012-13 was Rs. 816 Lakh.

BHEL has adopted a 'Health, Safety and Environment (HSE)' policy along with detailed guidelines under it. All units of BHEL strictly adhere to this policy. The HSE policy of BHEL is:

CORPORATE HEALTH, SAFETY & ENVIRONMENT POLICY

BHEL is committed to being an environment friendly company in all its activities, products, and services and to provide safe and healthy working environment to all employees as an integral part of business performance through:

- ❖ Compliance with applicable Legislation and Regulations
- ❖ Continual improvement in the Occupational Health, Safety and Environmental Management
- ❖ Systems Performance
- ❖ Promotion of activities for conservation of resources by Environmental Management
- ❖ Enhancement of Environmental, Safety and Occupational Health awareness amongst employees,
- ❖ customers and suppliers by proactive communication and training
- ❖ Periodical review of Occupational Health, Safety & Environmental Management Systems to
- ❖ ensure its continuing suitability, adequacy and effectiveness
- ❖ Communication of this Policy to all employees and interested parties
- ❖ Coordination with concerned Government agencies/regulatory bodies engaged in Occupational Health, Safety & Environmental activities

This policy shall be made available to all employees and interested parties.

BHEL has acquired certifications to Quality Management Systems (ISO 9001), Environmental Management Systems (ISO 14001) and Occupational Health & Safety Management Systems (OHSAS 18001) and is also well on its journey towards Total Quality Management. The Environment Management System (EMS) provides for an excellent framework to identify / assess potential Environmental risks and address them in structured manner. As per the applicable statutes, the Environmental Statement showing related environmental compliance is submitted to the respective State pollution Control Board by all the manufacturing units by September month every year for the preceding financial year. The Units of BHEL undergo regular internal and external audits by the certifying agency, in line with Corporate HSE policy covering Environmental, Occupational Health and Safety aspects. The Units regularly update their licenses as per statuette.

BHEL is environment conscious for air, water, waste and hazardous materials which are handled as per Codes, including its disposal through licensed agencies. 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.

To support scientific research on the environmental issues involved, Pollution Control Research Institute (PCRI) at BHEL's Haridwar plant was set up under United Nations Development Programme (UNDP) with an objective to evolve technologies and provide consultancy services in the area of industrial pollution with respect to air, water, noise and solid waste. PCRI is equipped with modern monitoring and analytical facilities and powered by a team of highly qualified engineers and scientists. The expertise available at PCRI is continually upgraded through association with renowned experts in the field, strengthening the capabilities of the institute. The activities of PCRI cover the following areas:

- Environmental Impact Assessment e.g. for Thermal Power Plants, Oil Exploratory Drilling sites and other large industries
- Sponsored Research & Development Projects of CPCB, MoEF
- Performance evaluation of Pollution Control Systems and recommendations for corrective measures
- Monitoring & Analysis of pollution levels in air, water, solid waste
- Training & Development of professionals engaged in environmental protection
- Establishment of Environmental and Chemical Labs for Thermal Power Plants
- Regional Environmental Studies
- Consultancy services

Principle 8): Undertake initiatives to promote greater environmental responsibilities

Further, the concept of Sustainability has been ingrained in the DNA of BHEL which is evident from the Mission Statement – “Providing Sustainable Business solutions in the fields of Energy, Industry & Infrastructure”. Sustainability is an integral part of the company's strategy. A two tier (Corporate and Manufacturing Units) organization structure has been developed under Corporate HSE department of BHEL to establish, implement, monitor, measure, and improve the Environment performance towards the objective of driving Sustainable Development.

In line with Department of Public Enterprises (DPE) Guidelines on Corporate Social Responsibility for Central Public Sector Enterprises (CPSEs), the Board constituted the Board Level Apex Committee (BLAC) for CSR on 25th November,

2010 for proper & periodic monitoring of CSR activities. Further, in terms of DPE Guidelines on Sustainable Development, the Board of Directors mandated that the Committee will also oversee Sustainable development activities. Accordingly, the said Committee was re-designated as “Board Level Committee (BLC) for Corporate Social Responsibility (CSR) & Sustainable Development (SD)” in year 2011. It is having independent and functional directors of BHEL as its members and is headed by independent director. BHEL has defined its SD policy keeping in view the scale & nature of organization’s activities, products & services. The SD projects undertaken in 2012-13 were having thrust on the projects in the fields of Rain water harvesting, afforestation, captive power generation based on Solar energy, use of renewable energy, energy efficiency & conservation and waste disposal. The SD Policy of BHEL is produced below:

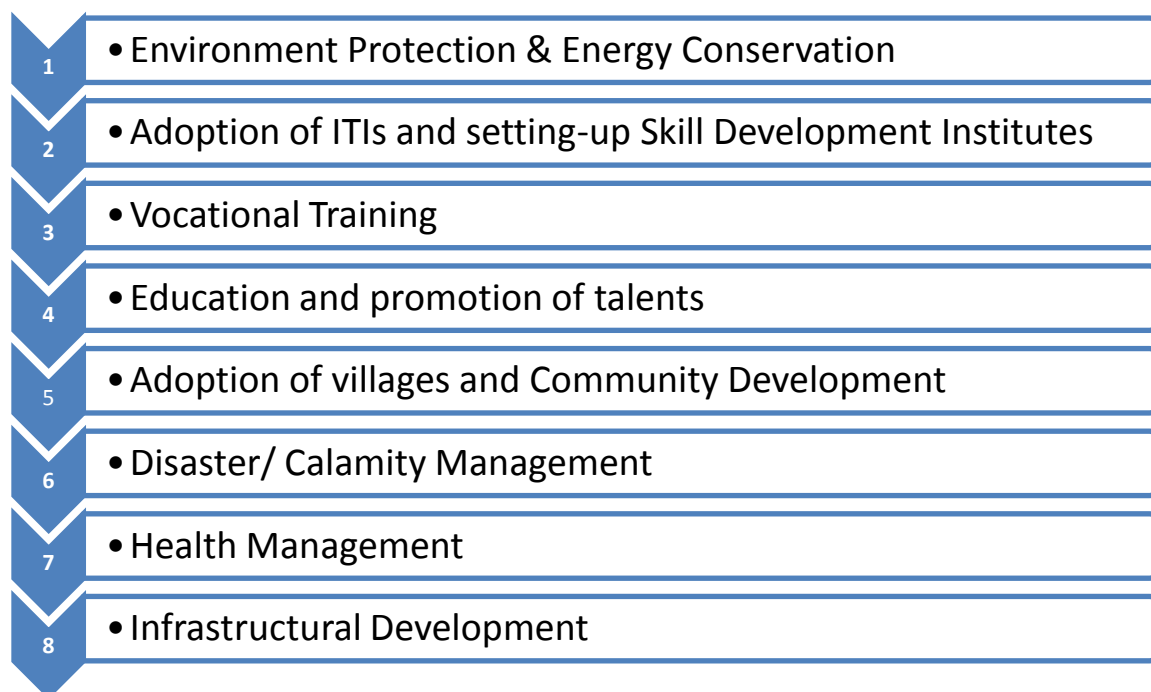


Sustainable Development Policy for BHEL

- *We at BHEL offer products, Systems and services designed to benefit the society.*
- *We are committed to undertaking practices that meet the economic, ecological and social responsibility tenets of Sustainable Development.*
- *We will work with all our shareholders to ensure continuous improvement in the sustainable Development of our operations within the ambit of the guideline issued by Government of India.*

As part of its commitment towards the social environment and as a responsible corporate citizen, BHEL is involved in a wide array of community development programmes in various parts of the country. In conformity with the revised CSR & Sustainability Guidelines issued by Department of Public Enterprises in February 2013, BHEL has allocated 1.1 % of PAT of the year 2012-13 as CSR & Sustainability budget for the year 2013-14. Fostering the tradition of repaying the society at large by actively participating in the welfare of local communities through numerous Corporate Social Responsibility & Sustainability initiatives, BHEL undertakes socio-economic and community development programmes to promote education, improvement of living conditions and hygiene in villages and communities located in the vicinity of its manufacturing plants and project sites spread across the country.

In addition, BHEL undertakes CSR initiatives for implementation through various NGOs/Trusts/ Social Welfare Societies engaged in social activities throughout the country in following eight priority areas:



The Memorandum of Understanding (MoU) 2013-14 of BHEL with Department of Heavy industry, Ministry of Heavy Industry and Public Enterprises includes thrust areas on Sustainable Development and CSR relating to Environmental Protection, Energy Conservation, Renewable Energy use, Water harvesting and enhancing Green Coverage.

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

BHEL's products, including clean technologies are regularly monitored against those of other leading similar equipment manufacturers and relevant international standards. Gaps, if any, are identified and developmental projects are undertaken to bridge them.

BHEL has been actively developing and acquiring clean technologies for power generation over past three decades. BHEL had initiated a coal research programme in the late seventies to develop technologies to efficiently utilize Indian Coal while minimizing the associated environmental impacts. These

cleaner technologies enable BHEL's customers to minimize the impact of power generation on the environment. Some of them are mentioned below:

- **Integrated Gasification Combined Cycle (IGCC)** – BHEL is one of the few companies worldwide, involved in the development of Integrated Gasification Combined Cycle (IGCC) technology which would usher in clean coal technology.

An IGCC power plant combines the benefits of two highly efficient and environmentally clean processes: coal gasification and gas turbine based combined cycle. The integration of these technologies yields high efficiency of the combined cycle design with low cost coal as fuel. Gasification also inherently reduces emission of SO_x . Further as the coal gas is cleaned before being fired in the gas turbine, particulate pollutants in the exhaust gases are negligible.

- **Supercritical Thermal power Plant** – A Supercritical thermal power plant has higher efficiency compared to the conventional sub-critical cycle, thus offering the advantage of burning lesser fuel for the same output and with low emissions. BHEL is executing orders for 660, 700 and 800 MW supercritical steam generators and turbo generators. BHEL has developed designs for Boilers, turbines and other steam-wetted power plant equipment that operate under Super Critical steam parameters. Compared to conventional subcritical power plant equipment, supercritical plant equipment need to handle and endure steam at a much severe pressure and temperature conditions. This in turn results in more efficient power generation leading to 2.5% to 3% increase in overall plant energy conversion efficiency levels. Supercritical plants also consume less make up water, use lesser steel and are more compact.
- **Advanced Ultra Supercritical (Adv-USC) Thermal Power Plant Technology** - Under the aegis of the National Mission on Clean Coal Technology, BHEL, in association with Indira Gandhi Center for Atomic Research (IGCAR), NTPC and other organizations is developing Advanced Ultra Supercritical plants. Once operational, such plants will operate at efficiency exceeding 45% under Indian ambient conditions.
- **Advanced Class Gas Turbines** - BHEL is the only Indian company capable of manufacturing large size gas based power plant equipment, comprising of advanced-class gas turbines up to 289 MW (ISO) rating for open and combined-cycle operations. The efficiency of an Advanced Class GT in the combined cycle mode is in the range of 56 - 57% under

Indian conditions. Natural gas as fuel used in the gas turbine based combined cycle plants is the cleanest among the fossil fuels and produces the minimum pollution and carbon dioxide emission.

- **Sub-critical Thermal Power Plants with Enhanced Efficiency** - BHEL has been continually making efforts to improve the efficiency of thermal power plants. A new variant of 500 MW steam turbine has been introduced by BHEL wherein thermal performance of the cycle is about 0.6% better than that of the conventional cycle. A new cost effective and thermodynamically efficient plant with a unit rating of 600 MW has also been developed.

Hydro Power Plants - BHEL is a leading manufacturer and supplier of hydro power plant equipment, including hydro turbines and hydro-generators. These are comparable to the best in the world in terms of operating efficiencies. The product portfolio of BHEL includes custom built hydro turbines of Kaplan, Francis and Pelton types with matching generators, pump turbines with matching motor-generators up to 300 MW.

- **Reduction of NO_x and SO_x Emissions** - Emissions of oxides from thermal power plants of Nitrogen and Sulphur are collectively called NO_x and SO_x, and are a health hazard. BHEL has developed in-house several technologies for reduction of emissions from thermal power plants. Low NO_x oil fired burners have also been developed. In addition, BHEL has developed a Selective Catalytic Reduction (SCR) system which can remove NO_x from the flue gas.

BHEL has also developed a dynamic classifier system which improves classification efficiency of the pulveriser and provides better particle size control enabling availability of uniform coal size to the burners leading to improvements of combustion efficiency of boiler and reduction in NO_x emission from the boiler. The new dynamic classifier system has been commissioned at Dr. Narla Tata Rao Thermal Power Plant, Vijayawada.

Flue Gas Desulphurisation (FGD) systems remove Sulphur Dioxide from the flue gas. BHEL has supplied an FGD system for 250 MW Trombay thermal power plants in association with Mitsubishi Heavy Industries, Japan.

Circulating Fluidised Bed Combustion (CFBC) power plants, which are suitable for high Sulphur content lignite, are also part of BHEL's product range.

- **Electrostatic Precipitators (ESPs)** - BHEL is the leading manufacturer and supplier of ESPs in the country used for removing fly ash from the flue gas (efficiencies up to 99.97%) for utility and industrial applications including Bio mass fired boilers, cement plants, steel plants, soda recovery boilers etc.
- **Solar Photovoltaics (SPV)** - BHEL is one of the leading manufacturer and supplier of silicon solar cells in India. For this, the Company has manufacturing facilities for solar photovoltaic cells modules at its Bangalore Unit with a capacity of 26 MW per annum. There is also an R&D facility, Amorphous Silicon Solar Cell Plant (ASSCP), located at Gurgaon.

BHEL has supplied more than 12 MW_p solar-PV clean energy systems to various customers in India. This includes a 5 MW_p solar farm established for Indian Oil Corporation Ltd at Rajasthan, a 3 MW_p solar farm established for Karnataka Power Corporation Ltd near Raichur, Karnataka, two sites of 2 MW_p solar farms in Maharashtra and a renovation and modernization of 1.9 MW_p Solar power sets at Lakshadweep islands.

- **Reverse osmosis based water purification systems** have been designed and supplied to thermal power stations for feed water make up system as an alternative to conventional chemical ion exchange based de-mineralization systems. Through this offering, the need for handling and consumption of large amounts of strong chemicals (acids and alkalies apart from anion/cation exchange resins) is totally obviated. While costing almost the same in terms of capital investment, RO based feed water makeup systems saves on the running cost (-20%) and also saves significantly on the ground area required to install (75%). BHEL has supplied such environmental friendly systems to North Chennai TPS in Tamilnadu, Pipavav combined cycle power plant in Gujarat, Bellary TPS in Karnataka in recent times.

BHEL has also undertaken R&D initiatives towards CO₂ reduction and/or CO₂ capture through Oxy-fuel combustion, Biomass combustion, Ammonia based CO₂ sequestration systems etc. Pilot scale demonstration of co-firing Indian coals with biomass like rice husk and wood pellets were carried and trials were successfully completed during 2012-13 with 20% wt biomass and 80% wt pulverised coal. By this technology for gainfully preventing Bio mass from getting decayed and decomposed to evolve Methane, a more harmful green house than CO₂ could be developed. Bio mass is a carbon neutral fuel, hence considered

environment friendly. Presently, establishment of 400 kW Oxy-Fuel combustion test rig is in progress at BHEL-Trichy. These initiatives will help to make environment cleaner with lesser emissions.

ANTI-CORRUPTION

Principle 10): Businesses should work against all forms of corruption, including extortion and bribery

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 a 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.

Main objective of the Company is to curb corruption by focusing more on the preventive and educative aspects, rather than investigative /punitive. Training programmes, seminars/conferences and interaction of Chief Vigilance Officer with the employees is a regular feature in the Company.

With a view to bring in transparency, Government of India has enacted "Right to Information Act" giving right to all citizens of India to seek information besides other rights. BHEL has taken a lead role in implementing all provisions of the act in letter and spirit.

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.

In order to prevent corruption, a host of 'transparency measures' have been initiated Company wide, by leveraging technology. Some of them are:

- Status of Purchase Orders, Works Contracts concluded every month, as per CVC format, is being uploaded by all Units.
- Procedure and forms related to Vendor registration are hosted on the Company web site.
- Status of vendor registration applications is hosted on the web and can be viewed by vendors.

- E-payment of vendor bills is being implemented throughout the organization and principle of first in first out is being followed as a rule in payment of vendor bills.
- Status of bill payment can be viewed by the vendors on-line.
- Indents are being raised on-line in most of the Units.
- The confidential reports of all executives are handled on-line through 'MAP' (Moving Ahead through Performance).
- Information relating to Rules/Procedures governing the issue of license, permissions, clearances etc., is available on the BHEL/Units websites.
- This year the Company has initiated uploading of project documentation on VIGEYE GPMS, with a view to raise alerts on probable inconsistencies during project execution.

As part of BHEL's endeavor to set a high standard of conduct for its employees, a 'Code of Business Conduct and Ethics' has been laid down for all Board Members and Senior Management personnel. The code encompasses General Moral Imperative, Specific Professional Responsibilities and Additional duties / imperatives for Board Members and Senior Management Personnel.