



### ENVIRONMENTAL POLICY

Tata Steel's environmental responsibilities are driven by our commitment to preserve the environment and are integral to the way we do business.

1. We are committed to deal proactively with Climate Change issue by efficient use of natural resources & energy; reducing and preventing pollution; promoting waste avoidance and recycling measures; and product stewardship.
  - We shall identify, assess and manage our environment impact.
  - We shall regularly monitor, review and report publicly our environmental performance.
  - We shall develop & rehabilitate abandoned sites through afforestation and landscaping and shall protect and preserve the biodiversity in the areas of our operations.
  - We shall enhance awareness, skill and competence of our employees and contractors so as to enable them to demonstrate their involvement, responsibility and accountability for sound environmental performance.
2. We are committed to continual improvement in our environmental performance.
  - We shall set objective-targets, develop, implement and maintain management standards and systems, and go beyond compliance of the relevant industry standards, legal and other requirements.
3. We will truly succeed when we sustain our environmental achievement and are valued by the communities in which we work.

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TATA STEEL



*Boosting  
Ecosystem  
Productivity*



 **EMBRACE  
THE  
ENVIRONMENT**



## GROUP VISION

We aspire to be the global steel industry benchmark for Value Creation and Corporate Citizenship.

### We make the difference through:

- Our **PEOPLE**, by fostering team work, nurturing talent, enhancing leadership capability and acting with pace, pride and passion.
- Our **OFFER**, by becoming the supplier of choice, delivering premium products and services and creating values with our customers.
- Our **INNOVATIVE APPROACH**, by developing leading edge solutions in technology, process and products.
- Our **CONDUCT**, by providing a safe working place, respecting the environment, caring for our communities and demonstrating high ethical standards.

**TATA**STEEL



## VISION FOR BIODIVERSITY

Did we know that we are one in a million? Or more precisely, one of the millions on this wonderfully diversified planet which has an estimated five million to hundred million species. Scientists have only managed to identify about two million species so far. If we think about it, there are a huge amount of species we still do not know about. What we do know, is that humans are among only a handful of species whose populations are growing rapidly, while most animals and plants are becoming rarer and fewer.

A total of 17,291 species on this planet are known to face the threat of extinction. This ranges from from little-known plants and insects to charismatic birds and mammals. However, this is just the tip of the iceberg; many species disappear before they are even discovered. The reason? Irresponsible human activities.

With our present approach to development, we have destructed much of the original forest, drained half of the world's wetlands, depleted three quarters of all fish stocks, and emitted enough heat-trapping gases to keep our planet warm for centuries to come.



As a result, we are increasingly risking the loss of the very foundation of our own survival. The variety of life on our planet known as 'biodiversity' gives us our food, clothes, fuel, medicine and much, much more. We may not think that a beetle in our backyard or grass growing by the roadside has a fundamental connection with us - but it does. When even one species is taken out of the intricate web of life, the results can be catastrophic. It breaks the food chain and breaks the process of planet's self development.

A world without biodiversity has a very bleak future. Millions of people and millions of species all share the same planet, and only together can we enjoy a safer and more prosperous future.

Taking a cue from this, Tata Steel has been investing in environmental sustainability and has played a vital role in boosting the biodiversity of the areas where it operates. Let us reconnect with nature and put in efforts to earn a reputation as a green pioneer and develop a new vision for biodiversity.

Tata Steel's commitment towards environmental issues associated with steel production processes is reflected in its Vision 2012 statement besides having structured management system in place already way back in 2000. One of the goals of the company to reduce CO2 emissions to less than 1.7 tonnes per liquid tonne of steel (t/tls) by 2012 shows the top management's commitment to address the Climate Change issues.



## THE GUIDING PRINCIPLE

Going green is both a corporate advantage and an opportunity for humanity to enable change. Steel industry is the largest energy consumers and supposedly highest polluting in the manufacturing sector and is far away from being in harmony with nature. But this is not true with Tata Steel. As one enters the Tata Steel Works in Jamshedpur, one discovers the pleasant green atmosphere and sweet music of migratory birds in the cooling ponds of the company.

The guiding principle, on which the foundation of the company was laid by its founder JN Tata more than hundred years ago, has clearly indicated the environmental consciousness even at that time.

“Be sure to lay wide strips planted with shady trees, every other of a quick growing variety. Be sure that there is a plenty of space for lawns and garden”

The development of any industry producing steel presupposes disturbance to the existing planet. Obviously large machinery, roads, paths etc are to be constructed. This also brings about climatic and environmental changes as well as biotic and abiotic disturbance. The proper management lies in its restoration.

Tata Steel as part of its “Five Peaks” programme has focused on environmental issues as well, to make their corporate success sustainable. Tata Steel management's approach to sustainability is to integrate consideration of the 'triple bottom line' economic, environmental and social performance into the company's thinking and business practice.





## STEPS TOWARDS BIODIVERSITY CONSERVATION

Tata Steel over the years has taken several environmental initiatives for the conservation, preservation and restoration of flora/fauna/biodiversity and has focused on five principal areas of environment management: optimizing all the natural resources to their fullest extent, focusing on water conservation and management, waste utilization and energy conservation, pollution control (to reduce CO2 emissions) and land reclamation along with protection of forest cover.

The environmental performance at Tata Steel encompasses biodiversity, energy, water, raw materials, emissions, effluents and waste management, all of which have a critical role to play in tackling and managing Climate Change.

The company has established a separate Environment Department inside the Works to constantly monitor the air and water pollution and take remedial measures accordingly. It established a separate section in the works to carry out plantation works on the unused areas in the works, create lawns and gardens, to carry out road side avenues, also to save the undisturbed pockets of natural habitats.

Tata Steel through its 100 per cent subsidiary, JUSCO (Jamshedpur Utilities and Services Company) is managing the township of Jamshedpur. This company has been assigned the job of beautifying the town, keep it green, improve the urban habitat and promote the greening of the town through awareness campaigns amongst the citizens. The public health department of JUSCO looks after the health needs of the people viz disposal of urban garbage, solid waste, immunization etc.

The company helped in establishment of a Horticultural Society in Jamshedpur. The society organizes several competitions and shows like Rose Shows, Green Foliage Shows, Vegetable Shows, Kitchen Garden Competitions etc. This has given the city a green look. Tata Steel has developed Botanical Parks at various locations.

One of the other roles of the Company is to conserve the existing fauna. For this, the Tata Steel Zoological Society was promoted with an objective to create and generate love amongst people towards wild life. Tata Steel takes adequate measures to ensure least damage to the nearby habitats. Besides that, Tata Steel has developed Tata Steel Zoological Park at Jamshedpur to protect the wild life.

The environmental concerns of the company are not restricted to the township of Jamshedpur. Its environmental conservation programmes have spread its wings across all its locations.

## REDUCING THE HARMFUL EFFECTS OF GLOBAL WARMING

As a responsible and socially conscious company, Tata Steel is playing a leading role by modernizing its facilities to be energy efficient in its production processes. Tata Steel has already reduced its Green House Gas emissions by 2.4%.

The company's efforts at continual improvement of its environment are well recognized. Tata Steel Main Works at Jamshedpur has been re-certified as ISO-14001 standard. In addition to this, Noamundi and Joda East Iron Mines, Sukinda Chromite Mines, Jamshedpur Town Division, Ferro Alloys Plant, Tubes Division, Bearings Division and West Bokaro and Jharia Collieries have also been re-certified for compliance to the requirement of international standard ISO-14001, 1996.

Having espoused the philosophy of sustainable development, Tata Steel's operations are now inextricably interlinked with the progress of the enterprise, welfare of the people and the health of the environment. As a part of Tata Steel's environment management technique, the company phased out of its pollution-prone old industrial units and installed state-of-the-art technology for preservation and protection of the environment, during the last year. The process is still continuing and Tata Steel aims at drastically reducing the level of environmental degradation.

In yet another vital step for better environment management, the company has commissioned a facility for the recovery of waste gases from the blast furnace in collaboration with New Energy and Industrial Development Organisation, Japan, under CDM, which is the first of its kind in India. CDM is a cooperative mechanism under Kyoto Protocol between developed and developing signatory countries, to meet partial obligations of developed countries to reduce their committed GHG emissions and help developing countries to achieve Sustainable Development.

Tata Steel is fully aware of the impact of its activities, products and services on the environment at a local and global scale. That is why the company's endeavour is not limited to compliance with applicable legislations, but to go beyond compliance with minimisation of process waste, optimisation of recovery and recycling of waste materials.



## TATA STEEL WORKS, HOME TO FLORA AND FAUNA

With structured management approach, awareness and technological intervention, Tata Steel has been able to provide for better water resources not only for industrial and human use but also for different species of flora and fauna inside its Works.

There are two cooling ponds in the steel plants—the lower cooling ponds, with capacity of 4,500,000 m<sup>3</sup> and the upper cooling ponds with a capacity of 900,000 m<sup>3</sup>. The returned service water from blast furnaces, mills, coke, oven plants etc, flows through two main channels, which leads to the lower cooling ponds. The lower cooling pond acts as a setting and cooling tank. Water from the lower cooling pond is pumped to the upper cooling ponds by means of one or two horizontal centrifugal pumps located in dam pump house. From the upper cooling pond, the service water is supplied various consumers through service water pumps located at pump house 1 & 2. These cooling ponds not only fulfill the needs of plant and public but also provide shelter to various species of migratory birds and rare floral species.

The rarest aquatic avian fauna found in the cooling ponds inside the company include Alcedo atthis Small Blue Kingfisher, Amauronis phoenicurus White Breasted Water Hen, Ardeola grayii Indian Pond Heron, Bubulus ibis Cattle Egret and Phalacrocorax Little Cormorant

Moreover, there are around 14 floral species including Hydrilla Kalmi, Ipomea aquatica, Aerva lanata Chaldhua and Boerhaavia repens Sant found around the cooling ponds inside the Tata Steel works.

The Butterfly species like Danaus (anosia) chrysippus, Euploea core, Catopsilia Pomona and Precia almanac have found a place of existence around the two cooling ponds.

Tata Steel aims at drastically reducing the level of environmental degradation. A couple of years back, a large area once used to dump construction material was transformed into a verdant green park, christened as the Centenary Growth Park. This was as part of the company's overall plan to continuously improve the environment within the Jamshedpur Steel Works.

The effort to provide a niche for those within our local eco-system which require special attention and at the same time to demonstrate that heavy industry does not necessarily debilitate the environment, a Centenary Rose Garden was created within the Steel Works.

The Rose Garden has several varieties of roses, including Dutch Roses, such as 'Naranga' (orange), 'Gold Strike' (yellow), 'First Red' (red), 'Noblesse' (pink), as well as high quality roses, which are being kept under protected conditions. The garden has over 3,000 roses. The area under production in polyhouse is 560 square metres. The first harvest of the roses was done on August 7, 2009.

The entire stretch leading to major facilities inside the Works has a green cover. Focus on greening activities is kept even during expansion work at Steel Works. More than 61,000 trees have been planted inside the Works, so far. To improve the aesthetics, parks are developed at the dismantled areas of the Works.



## Greenery and Gardens at Iron Ore Mines and Collieries



### Jharia Division

- Jharia Division has the oldest Washery in Asia (commissioned in 1952) with a capacity of 0.8 million tonnes raw coal throughput per annum. For the improvement of ambient air quality dry fog systems are installed in Jamadoba Washery and Bhelatand Washery.
- For the purpose of dust suppression water sprinklers are installed in the Washery.
- Sir Dorabji Tata Park has been developed at Jharia Division. The park is spread over an area of 25.47 acres.
- Fly ash experimental plots (50,000 sq mt) are developed in collaboration with CFRI to generate awareness on the fly ash utilization in agriculture, horticulture, a forestation.
- Installation of rain water harvesting system in

all collieries, washery, Power house office building.

- Jharia Division, so far has planted 11 lakh saplings.
- For the disposal of Bio Medical Waste, one incinerator is installed at Tata Central Hospital Jamadoba.

### West Bokaro Division

- West Bokaro has taken all measures to mitigate the impact on environment by installing latest equipments for air and water quality management and waste management.
- West Bokaro has switched over to Pipe Conveyor instead of open conveyor to transport coal.
- Development of park and gardens/patches for medicinal plants/ green belt around industrial unit.
- Every unit is provided with effluent recycling system. It includes ash handling system through ponds and recycling of water and tailing slurry handling through ponds and recycling of water to maintain zero discharge.

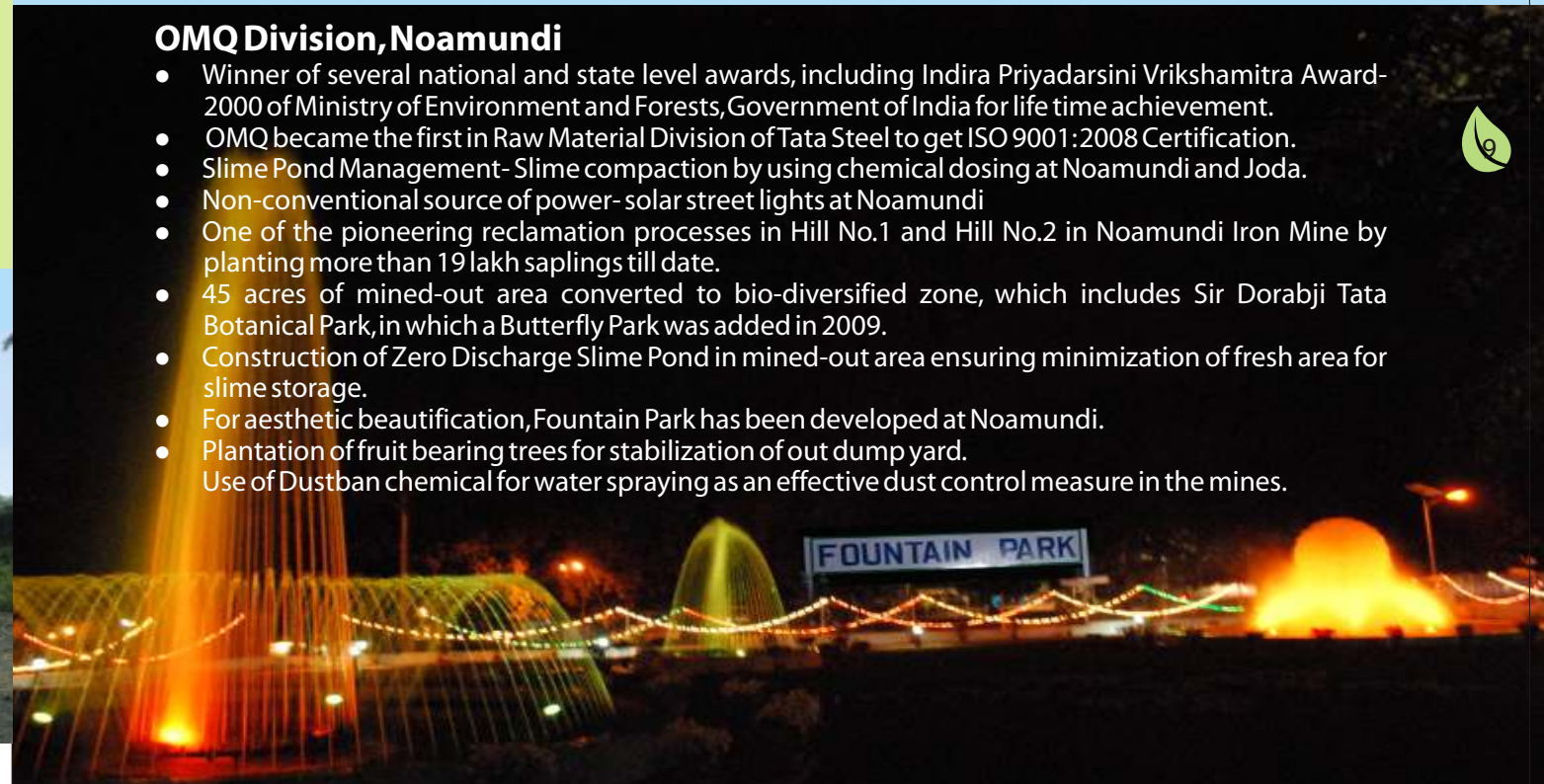


- All operating units equipped with A/C control room also operator cabin to minimize noise exposure.
- In the last five years, West Bokaro has planted 3.7 lakh saplings having survival rate of 70%.
- West Bokaro has seen 100% disposal of used oil, used battery and non ferrous scrap which are classified as hazardous waste.
- This is the first coal mine to be certified to ISO 14001 (Environment Management System).
- Awarded with Indira Priyadarshini Vrikshamitra National award on Environment.



### OMQ Division, Noamundi

- Winner of several national and state level awards, including Indira Priyadarshini Vrikshamitra Award-2000 of Ministry of Environment and Forests, Government of India for life time achievement.
- OMQ became the first in Raw Material Division of Tata Steel to get ISO 9001:2008 Certification.
- Slime Pond Management- Slime compaction by using chemical dosing at Noamundi and Joda.
- Non-conventional source of power- solar street lights at Noamundi
- One of the pioneering reclamation processes in Hill No.1 and Hill No.2 in Noamundi Iron Mine by planting more than 19 lakh saplings till date.
- 45 acres of mined-out area converted to bio-diversified zone, which includes Sir Dorabji Tata Botanical Park, in which a Butterfly Park was added in 2009.
- Construction of Zero Discharge Slime Pond in mined-out area ensuring minimization of fresh area for slime storage.
- For aesthetic beautification, Fountain Park has been developed at Noamundi.
- Plantation of fruit bearing trees for stabilization of out dump yard.
- Use of Dustban chemical for water spraying as an effective dust control measure in the mines.



### TREE PLANTATION INSIDE STEEL WORKS

Focus on greening activities is kept even during expansion work at steel works. To improve the aesthetics, parks are developed at the dismantled areas of the Works. The Cumulative tree plantation details are given below:



### SOLID WASTE MANAGEMENT

Tata Steel generates around 659 kilograms of various kinds of solid wastes (excluding fly ash) for every one tonne of crude steel produced. About 85 per cent of these wastes are utilized either through recycling and reuse in own processes or sold as input materials to other industries. Remaining wastes are sent for safe land filling.

The strategy is to generate less waste by maximum utilization. The ash generation has been reduced to negligible quantity due to conversion of boilers to coal firing. The Waste Processing plant is already upgraded to segregate the metallic portion of reuse. Commercial trials for use of LD slag as soil conditioner were found successful and are being implemented improve utilization of LD slag. Other initiatives include use of LD slag as rail/road blast.

Further, PHHS (Public Health & Horticulture Services) of JUSCO is engaged in providing effective environmental sanitation services incorporation of environmentally sound services of municipal solid waste. The solid waste services are certified for international standards of ISO 9000- Quality Management System and EMS 14001 for Environmental Management System.

Certification of EMS 14001 is significant with respect to activities performed by JUSCO for conservation of environment, a commitment with its stake holders, including company employees and citizens of Jamshedpur.

PHHS manages about 300 tonnes per day of municipal solid wastes involving its collection, transportation, processing and disposal. PHHS adheres to all legal norms as notified by the government of India towards management of municipal solid wastes.

JUSCO's legal compliance includes provision for colour coded bins specified for different types of wastes, covered transportation of entire waste by vehicles, processing of waste by vermin-composting and then ensuring its proper final disposal as per MSW-Management and handling rules 2000. This ensures reduction of significant green house gas emissions in the atmosphere by biodegradation of Municipal Solid Waste.

JUSCO is the only service provider in the entire country to be certified for ISO 9001, ISO 14001, and ISO 18001 (recommended) for providing Solid Waste services. JUSCO is committed not to use any hazardous chemicals in its entire disease prevention programme. A reduction in the use of conventional insecticides has been initiated to replace them with bio-pesticides in a phased manner.



## HORTICULTURE SERVICES

Under horticulture services, JUSCO is committed to provide and sustain a green environment of Jamshedpur city. Under Avenue and Strip Plantation programmes, more than 5 million trees have been planted in the city, making it one of the few urban areas with maximum green cover. JUSCO is maintaining 18 parks, 74 centre islands and other green avenues in the city. Every year massive plantation has been taken along the banks of the Subharnarekha River, to undertake plantation in order to reduce bank erosion and to create a green belt in the city. Jusco has performed desilting work of Jubilee Lake, one of the pristine water bodies of the city under its rejuvenation programme.



Under this, Lake has been developed and more fountains have been provided in order to sustain aquatic life sustaining conditions of water bodies. JUSCO also encourages schools, self help groups and other citizen groups by providing them tree saplings and tree guards to support tree plantation programmes. Selection of Jamshedpur city under the global Compact Habitat programme sponsored by the UN is testimony to JUSCO and its parent companies conscious efforts to sustain Jamshedpur's environment.

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## EXTENT OF RESOURCES

Management provides resources essential to the implementation and control of the Environment Health & Safety (EHS) activities. Resources include human resources and specialized skills, technology and financial resources. The financial resources are provided as per the financial powers and procedures laid down by the organization at various levels. Resource requirements are identified and adequate resource and trained personnel are provided for implementation and verification of EHS activities including internal management system audits. The requirement of resources is discussed in the Management Review Committee meetings at various levels.



Top management has appointed the Management Representative for ISO-14001: 2004 & Management Appointee for OHSAS-18001:1999, who irrespective of other responsibilities, has defined role, responsibilities and authorities for ensuring that EHSMS requirements are established, implemented and maintained in accordance with both the specifications.

## CHALLENGES IDENTIFIED

CO<sub>2</sub> reduction to level of 1.5 t/tcs- in the vision 2012, the company emphasises on CO<sub>2</sub> emission reduction, which is planned to achieve by energy efficiency process improvements, CDM projects and participation at various international/national bodies in response to climate change.

Reduction in pollution level - The steel plant has implemented various initiatives like conversion coal fired boilers to gas firing, designing the process units for stringent emission norms. The result of these initiatives is visible in the performance parameters. To improve further, the existing plant is also being proposed for upgradation w.r.t. Pollution Control Equipments to have the emissions less than 50 mg/Nm<sup>3</sup>.

Solid waste disposal- The strategy is to generate less waste by maximum utilization. The ash generation has been reduced to negligible quantity due to conversion of boilers to coal firing. The Waste Processing plant is already upgraded to segregate the metallic portion of reuse.

Commercial trails for use of LD slag as soil conditioner were found successful and are being implemented improve utilization of LD slag. Other initiatives include use of LD slag as rail/road blast.

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## PRACTICES/PROCESSES TO ADDRESS CHALLENGES

**EMS ISO 14001:-** Tata Steel is certified to ISO 14001 since 1999. Sustenance of EMS is a major challenge.

- Every MR/MRC meetings review the performance, resource requirement and possible need of changes.

**OHSAS 18001:** Implementation of Dupont initiatives to improve the safety performance.

- Dismantling the pollution prone processes and adopting the state of the art technology.
- Maximum utilization of by product fuels in the steel plant.
- Minimizing the waste generation and maximizing the waste utilization.
- Designing the new plants with stringent pollution norms.

### Use of recycled material in products

Tata Steel, due to its nature of operations in the integrated iron & steel plant do not use any waste from outside for recycling in the product manufacturing.

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## TATA STEEL ZOOLOGICAL PARK CONSERVING BIODIVERSITY

The birds, animals, insects and all forms of life are the best indicators of the health of environment of an area. The measurable elements are easily recorded but long term effects, which are not measurable, can be assessed with the study of flora and fauna of the area.



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This led to establishment of a Zoological Park in Jamshedpur in March 1994. It serves several objectives:-

- Identification of local species of flora and fauna.
- Opportunities for studies by researchers and students about the biology of animals and local species of plants.
- Spread awareness amongst people about the need to conserve the biodiversity.
- A place to relax in this heavily industrialized town
- Provide a green lung to the citizens
- To preserve baseline for study of flora of the area with the associated faunal species.

Recognition of the Zoological Park was also required under the Wildlife Protection Act of 1972 by the Central Zoo Authority, Government of India.. This has been done and now this is a recognized zoo by the Central Zoo Authority, Government of India., New Delhi. This has been recognized under the category of a Small Zoo.

## JUBILEE PARK CONTROLLING THE THERMO REGULATION OF JAMSHEDPUR

The city is adorned with a number of parks and gardens but the jubilee park, one of the features of Jamshedpur, is the foremost and most extensive one. Jubilee Park, is the replica of famous Brindavan garden of Mysore, and represents the most beautiful area of this industrial city. It covers an area odd 237.75 acre, situated in north- west part of the city, and is provided with a Jayanti Sarovar (40 acre).



As per the study done in 2004, the mean temperature range was 27.57 C to 35.72 C of the Jamshedpur city, from January to June 2004, while the mean temperature range of the Jubilee Park varied from 22.80 C to 31.14 C. The maximum mean temperature of the city was recorded 40.75 C in the month of May and minimum mean temperature was 27.57 C in the month of January. The maximum average temperature of the park area was registered 32.37 C in the month of April and the minimum one was 22.80 C in the month of January.

The average temperature difference was observed minimum of 4.58 C in January. Moreover, the maximum mean temperature difference was recorded (10.95 C) in March. The average temperature difference per month between the Jamshedpur city and Jubilee park area was recorded 7.29 C.

It was worth noted that mean temperature difference between the Jamshedpur city and Jubilee Park area was significant in each month.

The air temperature difference between the two environments is substantial. This suggests that the park area always remains cooler than the rest of the city. Thus, the level of acceptable thermal condition for the human population of the steel city may be due to the presence of the Jubilee Park. It is the presence of the Jubilee Park that is making the environment of Jamshedpur more susceptible for us human beings to endure.

