

# 7<sup>th</sup> International R&D Conference

Development and Management of Water  
and Energy Resources

4-6<sup>th</sup> February 2009

Bhubaneswar ( Orissa) 2009

## INTRODUCTION

Water Resources and Energy are core sectors that play a vital role in the economic development of a country and for improving the living standard of its people. Notwithstanding the considerable progress made by India in the twin sectors of water and energy since independence, there are still many areas, which need special attention, while there may be others which need continuous monitoring to study the results of implementation of new technologies. To meet the increasing demand of the people in terms of both the quality and quantity of water and power supply, it is necessary that managerial and technological improvements are made continuously to fully utilize the infrastructure already developed, in addition to further harnessing of the available resources.

Since its inception in 1927, the Central Board of Irrigation & Power (CBIP), has been promoting Research and Development (R&D) in water resources, energy and allied disciplines and has been holding R&D sessions, annually, as one of its principal activities with a view to enabling dissemination and exchange of information on new technologies for sustainable development of water and energy resources.

With effect from the year 1995, which marked the 60<sup>th</sup> (Diamond Jubilee) R&D session at the national level, the CBIP decided to organize the event, once in two years, as an International R&D Conference with a view to sharing research results at a global level in the changed economic scenario. The first six International R&D Conferences have been held so far in 1995, 1997, 2000, 2003, 2005 and 2007, in the states of Delhi, Gujarat, Karnataka, Madhya Pradesh, Maharashtra and Uttar Pradesh.

The CBIP and Government of Orissa (Water Resources and Energy Departments) will be organizing the 7<sup>th</sup> International R&D Conference from 4-6 February 2009 at Bhubaneswar (Orissa) India, on the Theme **"Development and Management of Water and Energy Resources"**.

During the conference there will be focused sessions on "Extreme Events & their Management" and "Distribution of Power".

## WATER AND ENERGY SCENARIO OF ORISSA

Orissa is one of the few states in the country, which is endowed with abundant water resources. But this resource is very unevenly distributed over time and space. The rainfall which is the main source of water varies from about 1200 mm in southern coastal plain to about 1700 mm in northern plateau. The long-term average annual rainfall in the State is of the order of 1482 mm, which is equivalent to 230.76 billion cubic metres (BCM) of water. Though substantial in quantity, 78% of the above is received in the monsoon season (June to September) and remaining 22% is available in eight months. In spite of the said availability of water, some areas are frequently visited by droughts.

Considering the topography and geological limitations, only 75% of the average annual flow can be utilized. Due to increasing demands for water for various uses, an attempt has been made to assess the availability of Water Resources by the year 2051. The assessment reveals that the surface water availability from its own drainage boundary remains more or less fixed but the inflow of surface water from neighbouring states will be reduced from 37.556 BCM to 25.272 BCM. Reduction in availability of water could further complicate the issue.

Orissa is the first state in the Country to have undertaken reforms and restructuring in power sector to make power supply more efficient and to be able to meet the investment needs of the sector. Disinvestment in power distribution sector is a major step in the power sector reform initiative which is now being replicated in other states of the country. The increase in population coupled with competing demands of water by various sectors, essentially warrants an integrated water resources development and management approach. To usher in balanced socio-economic growth of Orissa that hinges on sustainable development with strong fundamentals of industrial growth, right harnessing of natural resources is the key.

The present effort of the State Government is to consolidate the efforts already made in power sector reforms and to take it to its logical conclusion when this sector would be fully able to stand by itself and work with enhanced efficiency to the best of public satisfaction and industrial promotion in the state. Their experience in energy sector would be very useful and beneficial to the participants.

## **DATES AND VENUE**

The conference will be held at Hotel Swosti Plaza, P-1, Jayadev Vihar, Bhubaneswar 751 013 (Orissa), India, (Tel: +91 674 2300008; web: [www.swosti.com](http://www.swosti.com)) during 4-6 February 2009.

The venue hotel is offering special room tariff of Indian Rs. 3,000.00/3,600.00 for single/double occupancy (standard room), including buffet breakfast. For reservation of room at venue hotel, please contact at [reservations@swosti.com](mailto:reservations@swosti.com).

## **CONFERENCE TOPICS**

### ***WATER RESOURCES***

#### **1.0 Assessment of Water Resources and their use**

- 1.1 Assessment of Water Resources Potential
- 1.2 Assessment of Water use in various Sectors
- 1.3 Assessment of Irrigation Potential
- 1.4 Water and Energy Security
- 1.5 Impact of Climate Changes

#### **2.0 Water Resources Development and Management**

- 2.1 Investigations & Planning (Geophysical, Geological, Geotechnical, Seismological Investigations, etc.)
- 2.2 River Behaviour & their Management (River Hydraulics, Morphology, River Flows, River Training, Inland Waterways, Sedimentation etc.)
- 2.3 Groundwater Resources & their Management (Investigations, Hydrology, Aquifer Characteristics, Structures, Development, Modelling, Pollution, Artificial Recharge, etc.)
- 2.4 Domestic & Industrial Water Supply (Urban, Rural and Industrial Water Needs & Supplies, Recycling & Reuse etc.)
- 2.5 Soil-Crop-Water-Atmospheric interactions, Irrigation Scheduling, Benchmarking, Canal Automation etc.
- 2.6 Waterlogging, Land Degradation and Reclamation
- 2.7 Watershed Development and Its Sustained Impacts
- 2.8 Roof Water Harvesting
- 2.9 Stake Holder Participation in Water Resources Management
- 2.10 Sustainability Issues of Water Resource Management
- 2.11 Research Needs and Capacity Building

#### **3.0 Infrastructure and Water Management**

- 3.1 Hydraulic Structures (Dams, Spillways, etc.)
- 3.2 Irrigation Systems Design (Structural & Operational Designs)
- 3.3 Extension, Renovation and Modernization (ERM) of Irrigation Systems (Major Medium Projects)
- 3.4 Renovation of Minor Irrigation Structures and Minor Storages
- 3.5 Design and Layout of Pressurised Irrigation Systems

#### **4.0 Water Quality and Environment and Social Issues**

- 4.1 Environmental Impact Assessment (EIA) of Water Resources Projects
- 4.2 Water Quality Management
- 4.3 Water Governance, Legislation & Institutional Mechanism
- 4.4 Research Needs and Capacity Building *i*

#### **5.0 Application of Frontier Technologies in Water & Energy Sectors**

- 5.1 Space Technologies
- 5.2 Information Technologies
- 5.3 Operational Research Tools
- 5.4 Nano Technology
- 5.5 Automation and e- Governance and Use of Smart Cards etc.

#### **Special Session on "Extreme Events & their Management"**

- Floods and Droughts, their Forecasting and Management
- Cyclones, Tidal Waves
- Earthquakes and Landslides
- Disaster Management
- Risk Assessment
- Research Needs and Capacity Building

## **POWER**

#### **6.0 Power Generation**

- 6.1 Accelerated Development of Power Generation in Hydro, Thermal and Nuclear
- 6.2 Development of Renewable Energy Sources
- 6.3 Pooling of Power through Captive Power Plant Generation
- 6.4 Renovation, Modernization & Uprating of Power Plants in Generation
- 6.5 Small Hydro Power Development
- 6.6 Silt Damage Control Measures for Underground Parts
- 6.7 Innovation in Manufacturing Equipment in Power Generation
- 6.8 Contribution of Power Generation by IPPs

#### **7.0 Power System Planning, Operation and Control**

- 7.1 Planning for Power Development
- 7.2 Quality of Power - Voltage Profile, Harmonic Pollution, Interruptions
- 7.3 Integrated System Operation
- 7.4 Substation Automation and SCADA
- 7.5 Crisis Management
- 7.6 Disaster Management
- 7.7 Energy Demand Database, Load Research and Analysis

#### **8.0 Transmission & Communication**

- 8.1 Transmission System Development
- 8.2 Development of National Grid
- 8.3 Growth of 765 kV System
- 8.4 Long Distance Transmission of Bulk Power - HVDC, EHVAC and UHV
- 8.5 Upgrading/Uprating of Transmission Lines/Corridors
- 8.6 FACTS (Flexible AC Transmission System)

8.7 Communication Technologies - Optical Fibre Technology, Protocols, etc.

### **9.0 Power Trading, Reforms and Regulation**

9.1 Power Pool Arrangements

9.2 Availability Based Tariff

### **10.0 Miscellaneous**

10.1 Safety in Construction Works of Power House/Substation

10.2 Training and Requirement for Skilled Man Power

10.3 Augmentation of Manufacturing Capabilities of various Equipment

### **Special Session on "Distribution of Power" Planning**

- Improvements in Distribution System
- Peak Power Management in Distribution System
- Metering and Energy Audits
- Reliable Supply of Power to Villages
- Reliable Power for Industrial Estate and Large Commercial Loads
- Town & Urban Electricity Supply Improvement
- Tariff Rationalization and Revenue Management

### **Construction**

- Rural Electrification Installations.
- Accelerated Power Development & Reforms Programme (APDRP) for Distribution

### **Operation and Maintenance**

- Reduction of Distribution Losses and System Optimization
- Theft of Power
- Maintenance of Distribution Transformers
- Distribution Automation
- Safety Aspects in Distribution
- Current Trends in Manufacture & Quality Assurance including use of Transformer Oil
- Innovation in Distribution System - Amorphous Core Distribution Transformer & Cast Resin Dry Type Transformers etc.
- Repair of Distribution Transformers and Failure Analysis
- Energy Efficient Equipments
- Demand Side Load Management
- Minimization of Failure Rate of Distribution Transformers
- Reactive Power Compensation
- Education and Awareness about Energy Conservation