

*First Information Bulletin &  
Call for Papers*

*8<sup>th</sup> International R&D Conference*  
**on  
Global Trends in Water Resources,  
Power & RE Sectors**

**20-23 December 2022, IIT Gandhinagar, Gujarat, India**



**Highlights :**

- Opportunity to interact with National & International experts on latest Innovations.
- An Exhibition displaying latest state of the Art Technological development and innovations.
- Awards Ceremony

**Organised by**



**Central Board of Irrigation & Power  
New Delhi**

**in Collaboration with**



**Sardar Sarovar Narmada Nigam Ltd.  
Gandhinagar, Gujarat**

**Technology Partner**



**IIT  
Gandhinagar, Gujarat**

# Invitation

Greetings from CBIP

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 enable dissemination and exchange of information on new technologies for sustainable development of water and energy resources.

CBIP has been holding Annual Research Sessions regularly in different states since 1930, wherein all the research stations used to present highlighting their innovative research activities and findings, resulting in a useful exchange of knowledge and experience amongst all the research professionals and field engineers. This practice continued till 1995. After this, International R&D Conferences were organized. Till date we have organized seven such conferences at New Delhi, Vadodara, Jabalpur, Aurangabad, Bangalore, Lucknow and Bhubaneswar during 1995 to 2007 with the support of respective state Government as partner state for the session. To encourage the R&D, CBIP also presented Awards during these sessions.

Based on the demand and requirement when the frequency of knowledge sharing sessions on various topics were increased, the achievement of R&D were included in each of the training programs, and the requirement of R&D session every two years was discontinued.

When there is lot of development taking place and a number of upcoming & new technologies, their deployment, and impacts on the environment, economy and other policy concern, a specific session on R&D is again felt to be important & useful.

CBIP in collaboration with Sardar Sarovar Narmada Nigam Ltd., Gandhinagar and IIT Gandhinagar as 'Technology Partner' proposes to hold its 8th International R&D Conference during 20-23 December 2022 at IIT Gandhinagar, Gujarat. The theme proposed for International R&D Conference is 'Global Trends in Water Resources, Power & RE Sectors'.

We are looking forward to welcoming and meeting you in 8th R&D Conference 2022 at IIT Gandhinagar.



**Dr. R.K Gupta**  
*President CBIP and  
Chairman*  
Central Water Commission



**Vivek Kapadia**  
*Director*  
Sardar Sarovar Narmada  
Nigam Ltd.  
*Secretary, Govt. of Gujarat*



**Amit Prashant**  
*Director*  
Indian Institute of  
Technology Gandhinagar



**A.K. Dinkar**  
*Secretary*  
Central Board of Irrigation  
& Power



## VENUE AND DATE

The conference will be held at IIT, Gandhinagar, Gujarat during 20-23 December 2022.

## CONFERENCE TOPICS

### WATER RESOURCES

#### W1. Assessment of Water Resources and their use

- Assessment of Water Resources Potential
- Assessment of Water use in various Sectors
- Assessment of Irrigation Potential
- Water and Energy Security
- Impact of Climate Changes and its mitigation

#### W2. Water Resources Development and Management

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

#### W3. Infrastructure and Water Management

- Hydraulic Structures (Dams, Spillways, etc.)
- Irrigation Systems Design (Structural & Operational Designs)
- Extension, Renovation and Modernization (ERM) of Irrigation Systems (Major/Medium Projects)
- Renovation of Minor Irrigation Structures and Minor Storages

- Design and Layout of Pressurized Irrigation Systems
- Effective utilization of Irrigation Potential

#### W4. Water Quality, Environment and Social Issues

- Environmental Impact Assessment (EIA) of Water Resource Projects
- Water Quality Management
- Water Governance, Legislation & Institutional Mechanism
- Water Purification and Recycling
- Effect of Arsenic and Mitigation

#### W5. Application of Frontier Technologies in Water & Energy Sectors

- Space Technologies
- Information Technologies
- Operational Research Tools
- Nano Technology
- Automation and e- Governance and Use of Smart Cards etc.

#### Special Session on “Extreme Events & their Management”

- Glacial lake outburst flow and deluge
- Floods and Droughts, their Forecasting and Management
- Cyclones, Tidal Waves
- Earthquakes and Landslides
- Disaster Management
- Risk Assessment
- Research Needs and Capacity Building
  1. Impact of Climate Change in Water Availability Across Different River Basins.
  2. River Sedimentation: Advanced Techniques for Estimation and Monitoring.
  3. Using Remote Sensing Technology for Rivers Morphological Behaviour/ Siltation Pattern.



## POWER

### P1. Thermal Generation

- (a) Status and Future Plans, Policies
- (b) O&M – Issues, Challenges and Solutions
- (c) Smart Technologies and Innovative Research
  - Low Cost Fire Resistance Fluid for Turbine Control Valves with Oxide Resistance Property
  - Low Cost Ash Erosion Resistance paint for Application on Economizer & Low Temp Superheater Tubes.
  - Coal Burners for light up of Boiler (Directly from Coal Instead of Oil)
  - New Coal Nozzle Design with Proper Coal Regulation for flame Stabilization during Low Load Operation.
  - Technical Challenges of Thermal Units to adopt for Flexible Operation to Enable Integration with Renewable Energy Sources with the Grid.
  - Technical Challenges of Thermal Units to Adopt Biomass Utilization through Co-firing in Coal based Thermal Power Plants.
  - Co-firing of Thermal Plants with Ammonia.
  - Ammonia as Fuel for Gas Power Plants.
  - Hydrogen as Fuel for Gas Power Plants.
  - Innovations in R&M Practices.
  - Research for new Metals for Thermal Power Plants for Faster Ramp Up/down and Reduction in Technical Minimum Loading limit.
  - Efficiency Improvement Measures for Thermal Power Plants.
  - Automation and Control in Thermal Power Plants.

### P2. Hydro Generation

- (a) Status and Future Plan, Policies
- (b) O&M - Issues and Challenges
- (c) Smart Technologies and Innovative Research
  - Need of Modern Technologies to reduce installation and civil works.

- Modular Hydropower Systems for the dams used for irrigation and water needs.
- Pumped-storage hydropower as Energy Storage.
- Hybrid Power Plants.
- Untapped Kinetic Energy at the Outlet of Impulse Turbine.

### P3. Transmission

- (a) Status and Future Plan, Policies
- (b) O&M - Issues and Challenges
- (c) Smart technologies and Innovative Research
  - Prototyping for V2G (Vehicle to Grid).
  - Study for Manufacturing of EHV Transformers with VPI winding to avoid Influence of Moisture.
  - Use of Fiber Reinforced Plastics in Transmission Tower Design: Research Area: Explore utilization of FRP as structural Material in Design & Development of Transmission Lines.
  - Maloperation/false Operation of Protective Relays under Renewable Power Integration, Especially the distance element of long transmission line subjected to Heavy Injection of Converter Fed Power Source.
  - Wide-Area Power Swing Damping Control using PMU (synchro phasor) measurements and Grid-Connected Converter Systems (including HVDC, FACTS, Solar PV and Battery Systems).
  - Material Science Research to Develop Substitutes for XLPE Compounds (Bio-degradable Substitute) and Substitutes for SF<sub>6</sub>.
  - Cable Jointing Kits.
  - Drone Applications.
  - Online Transformer Oil Drying Out System (TODOS).
  - Wireless transmission of Power.





#### P4. Distribution

- (a) Status and Future Plan, Policies
- (b) O&M - Issues and Challenges
- (c) Smart technologies and Innovative Research
  - Impact on Distribution Transformer due to High Capacity / Fast Electric Vehicles Chargers.
  - Applications of AI for Managing the growing complexity in the Distributions Systems, Economizing the System Operation.
  - Applications of Big Data and IOT in the Power System and Distribution Sector.
  - Demand Side Response.
  - Effective Means for GIS Mapping.
  - Concept of Distribution System Operator (DSO) and its Realization.
  - Social impact of Power Supply Reliability.
  - Study on Consumer behavior.
  - Behavioral traits of EV Owners.
  - Power Quality and Reliability Issues.
- (b) Role of Circular Economy in Power Sector
- (c) Safety in Construction Works of Power House/ Substation
- (d) Training and Requirement for Skilled Man Power
- (e) Augmentation of Manufacturing Capabilities of various Equipment
  - Journey to Energy Transition
  - Hydrogen Economy.
  - Use of Bio Mass, Bagasse and Agri Residue for Power Generation.
  - Mitigating the Impacts of DSM (Deviation Settlement Issues).
  - Development of metals for High Pressure Hydrogen Storage Cylinders.
  - Development of Universal Connector at Electric Vehicle end.
  - Development of Task Specific Ionic Liquids as Electrolyte Additive/electrode Protective for Lithium Ion Batteries.
  - Electrodes made of Restacked Layered Materials differ substantially from the Conventional Crystalline Layered Solids.
  - Development of Redox Flow Batteries.
  - Optimal Sizing and Location of Energy Storage Systems (ESS).
  - Cyber Security.
  - Waste Disposal and Circular Economy.
  - Li- Ion Battery- Raw Material Reclamation after end of Life of Battery.
  - Tools in Data Analytics.
  - Penetration of Information and Communications Technology ICT Application in Power Sector.
  - Impact of Operating Temperature of Battery and Energy Storage Devices on their Performance & Overall Safety.
  - Energy Conservations and Energy Efficiency – in various Sectors like Lighting, Industry and Domestic use.

#### RENEWABLE ENERGY

- (a) Advances in Power Generation from RE Resources
  - New efficient RE Technologies.
  - Integration Technologies.
- (b) Status and future Plan, Policies
- (c) O&M - Issues and Challenges
- (d) Smart Technologies and Innovative Research
  - Battery Energy Storage System.
  - Distributed Energy Resource Management System (DERM).
  - Smart Grid.
  - Waste to Energy Technologies.
  - Energy Storage Solutions and Management.

#### Miscellaneous (Power Sector)

- (a) Energy Sector Transformation through Block Chain Technology



## POWER TRADING, REFORMS AND REGULATION

- (a) Power Pool Arrangements
- (b) Power markets, Regulatory Processes
- (c) Availability Based Tariff
  - Market Mechanism and Design- Payment Mechanism.
  - Green Financing Models and Business Models.

## CALL FOR PAPERS

### Abstracts Layout

- The length of abstract should not be more than 250 words, plain text
- Title: Make the title of the abstract brief clearly indicating the subjects
- Name(s) and affiliation(s) of the author(s) with email address

### Abstract submission date

- Authors are invited to submit their abstracts on any of the above topics.
- All accepted papers will be published electronically in the conference.
- The deadline for submission for abstract is 30 September 2022.

### Method of Submission

- **For submitting abstract please visit [www. cbip.org](http://www.cbip.org) → Events → forthcoming events → 8th R&D Conference must be submitted only via online.**

## REGISTRATION

The registration fee payable by the delegates, for participation in the conference is as follows:

Countries	Delegates	CBIP Members	Research Student	Accompanying Persons	Author
Indian	Rs. 15,000/-	Rs. 10,000/-	Rs. 7500/-	Rs. 5,000/-	Free
Foreigners	US \$ 200	US \$ 134	US \$ 100	US \$ 67	Free

GST @ 18% shall be charged extra. GST No. 07AAAJC0237F1ZU

- The registration fee covers the cost of registration kit, proceedings, lunch and tea in-between the technical sessions. The participants will have to make their own arrangements for travel and stay. No financial support will be provided by the organizers.
- An accompanying person must either be an immediate relative, spouse or children only.  
The last date for the receipt of filled in registration form is 15.12.22. Photocopies of the registration form can be used for additional requirements, if any. Spot registration facilities will also be available, provided the prior information is received.

## SPONSORSHIP OPPORTUNITIES

The conference provides an excellent opportunity to government organizations, power utilities, independent power producers, public sector undertakings, industrial organizations, equipment manufacturers, entrepreneurs, financial and funding institutions, consulting and construction organizations in India and abroad to publicize their services/products by being a co-organizer, sponsor, cosponsor or supporter of the conference. The fees payable and entitlements are mentioned below:

- Authors will be notified about the delivery of their abstract by e-mail immediately. In case, you do not receive confirmation with in 24 hrs, please check your spam folder and in case of no confirmation please contact [cbip@cbip.org](mailto:cbip@cbip.org); [arvind@cbip.org](mailto:arvind@cbip.org); [meenakshi@cbip.org](mailto:meenakshi@cbip.org)

### Abstracts Submission Instruction

- Abstracts can be submitted in English on the topics listed above
- Submitted abstract must be original. Abstracts previously published are presented on any forum should not be submitted.
- Fill in the submitting authors name and email address and mobile number properly- these contacts details will serve for further correspondence with the authors.

### Contacts

For any query regarding abstract /paper submission, please mailed to [cbip@cbip.org](mailto:cbip@cbip.org); [arvind@cbip.org](mailto:arvind@cbip.org); [meenakshi@cbip.org](mailto:meenakshi@cbip.org)

### DATES TO REMEMBER

- Deadline for submission of abstracts : 30 September 2022
- Notification of the acceptance of abstracts: 30 October 2022
- Submission of full texts of the accepted papers: 30 November 2022 (For Guide lines refer to [www.cbip.org](http://www.cbip.org))
- Submission of PPT : 10 December 2022 (For Guide lines refer to [www.cbip.org](http://www.cbip.org))



Entitlement	Levels						
	Platinum	Gold	Silver	Supporter	Kit Sponsor	Lunch Sponsor	Dinner Sponsor
	INR 10.00 lacs / US \$ 13,500	INR 7.00 lacs / US \$ 9,334	INR 5.00 lacs / US \$ 6,700	INR 2.00 lacs	INR 3.00 lacs	INR 3.00 lacs	INR 5.00 lacs
Logo on the Backdrop	✓	✓	✓	✓	✓	✓	✓
Complimentary Delegates	15	9	5	2	2	3	5
Audio Visual Presentation (in minutes)	15	10	–	–	–	–	10
Distribution of catalogues	✓	✓	✓	✓	✓	✓	✓
Exhibition Booth	✓	✓	–	–	–	–	✓
Advertisements (in page/s)	Two	Two	One	Half	Half	One	Two
Display of name during lunch hours	–	–	–	–	–	✓	–
Display of name during Dinner hours	–	–	–	–	–	–	✓
Name & Logo in the inner flap of the Kit	–	–	–	–	✓	–	–

## CALL FOR ADVERTISEMENTS

For further details, please contact the Conference Secretariat.

A limited space for insertion of colour advertisements in the souvenir is available at the following rates:

Back cover page Rs. 75,000/-

Second or Third cover page Rs. 50,000/- Full page (inside) Rs. 25,000/-

The last date for receipt of advertisements is 30th November 2022

**Note** : Material required in format of : Coraldraw, Pdf or JPEG file.

## EXHIBITION

An exhibition is planned as a technology showcase to meet the challenges of 21st century for the development and management of Water and Energy Resources. The strategic location of this event in India which is the largest democracy and the fifth largest economy in the World will be a key factor for the exhibitors who are looking for a gateway to this potential region.

Apart from the extensive international exposure to prospective exhibitor's products and services under one roof, exhibitors have a unique opportunity to spread their network in this region, find new joint ventures and profit from the growing business in this emerging and technologically important area.

The tariff for the exhibition stall of 3 x 3 m size is as under:

Exhibitors from India Rs. 75,000/-, Exhibitors from other Countries US \$ 1,000

### Facilities

- Chair 2
- Table 1
- Spotlight 3
- 15 Amp. Socket 1
- Waste Basket 1

One free nomination will be allowed to the exhibitor for participation in the conference. For additional nominations, registration fee shall be payable.

The exhibition stalls will be made available on 20.12.22 at 0800 Hrs. In case an exhibitor does not take over the allotted stall latest by 1100 Hrs. on 20.12.22, the organizers shall have the right to re-allot the stall without any indemnity.

The exhibition may be postponed, shortened or cancelled due to any cause whatsoever beyond the control of the organizers. The organizers shall not be responsible for any loss sustained by the exhibitors directly or indirectly attributable to the elements of nature, events of force majeure, such as war, panic, mob action, strikes, civil disorders, fire, floods, etc., including orders or directives imposed by any government authorities. In such an event money will be refunded after consideration of expenses to commitments. In all matters, not specially provided for, the decision of the organizers shall be final and binding.

For further details please contact the Conference Secretariat.

## OFFICIAL INVITATION

The invitation contained in this bulletin should generally suffice to plan travel formalities. However, should an official Invitation is needed; the same can be sent to the participants on request.

## TRAVEL AND VISA

The participants will have to make their own arrangement for travel and are advised to obtain the requisite visa from the Indian Embassy/High Commission in their country.

## PAYMENTS

The payment may be transferred directly to CBIP Account as per the following details:

All payments be made through DD/ cheque at par in favour of 'Central Board of Irrigation & Power', payable at Delhi or amount deposited/ transferred to HDFC Bank, CBIP A/c No. 00031110004411, MICR No. 110240001, Swift Code : HDFCINBBDEL, IFSC: HDFC 0000003, Address: 209-214, Kailash Building, 26 Kasturba Gandhi Marg, New Delhi – 110001

GST @ 18% shall be charged extra. GST No. 07AAAJC0237F1ZU

Bank charges if any, must be borne by the organization/participants and should not be deducted from the amount remitted to the Conference Secretariat.

The details of such transfer should be furnished to the organizers.

## CONFERENCE SECRETARIAT

**Mr. A.K. Dinkar**, *Secretary*

**Mr. Sanjeev Singh**, *Director (E)*

**Mr. K.K. Singh**, *Director (WR)*

### Central Board of Irrigation & Power

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Website: <http://www.cbip.org>

## INDIA – THE HOST COUNTRY

India is endowed with towering mountain ranges, rolling hills, lofty plateaus and extensive plains, which have played their role in shaping its cultural, economic and political history. The most outstanding characteristics of India, and probably one of its greatest charms, is undeniably, its diversity. India is a country with a sense of individuality and rich heritage; its civilization is unique in vitality and antiquity. It offers the visitor something special everywhere, and in everything. It is a land of treasures, temples, palaces, forts and magnificent scenery. Those seeking footprints of history will find that India has been a vast arena, where races and cultures have battled and blended, and creating sublime achievements in art, religion and philosophy

### GUJARAT – The Host State

Gujarat is a state on the western coast of India with a coastline of about 1,600 km (990 mi) – longest in the country, most of which lies on the Kathiawar peninsula – and a population of 60.4 million. It is the fifth-largest Indian state by area and the ninth-largest state by population. Gujarat is bordered by Rajasthan to the northeast, Dadra and Nagar Haveli and Daman and Diu to the south, Maharashtra to the southeast, Madhya Pradesh to the east, and the Arabian Sea and the Pakistani province of Sindh to the west. Its capital city is Gandhinagar, while its largest city is Ahmedabad. The Gujarati people of India are indigenous to the state and their language, Gujarati, is the state's official language. The state traditionally has low unemployment and is widely considered one of the most industrially developed states of India and a manufacturing hub.



Gandhinagar is a planned city in the western Indian state of Gujarat. The Akshardham is a massive Hindu temple with ornate carvings and sculpted pillars, plus a water show in its sprawling gardens. Dandi Kutir museum traces the life of leader Mahatma Gandhi, who was born in Gujarat. South, along the Sabarmati River, the Indroda Nature Park has a zoo and botanical gardens, plus an adjacent dinosaur and fossil park.