CONFERENCE REPORT

TRANSCEND - EVOLVE - SUSTAIN

TECHNOSCAPE 2023

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1. INTRODUCTION

Water, the most vital natural resource, has touched every aspect of human life. Various anthropogenic activities are threatening its very existence. Notably, the wastewater generated by municipal and industrial usage endangers global ecosystems. If the judicious utilisation of the remaining supplies is to be ensured, it is our responsibility as human beings to search for viable conservation techniques. The international community has enthusiastically embraced the Sustainable Development Goals (SDG). In particular, SDG 6 has become the guiding light for efforts to meet the rising water demand and avert a worldwide water crisis. In tune with the United Nations' goal to 'Ensure availability and sustainable management of water and sanitation for all' by 2030, we at Vellore Institute of Technology-Vellore, INDIA, in collaboration with Yokohama National University (YNU), JAPAN, and Gdańsk University of Technology (GUT), POLAND, proposed to host TECHNOSCAPE[23], an international conference on Sustainable Technologies for Water and Wastewater Treatment, from 14th to 16th December 2023. TECHNOSCAPE[23] aimed to provide a platform for water enthusiasts and environmental experts to share their rich scientific experiences.

1.1 VELLORE INSTITUTE OF TECHNOLOGY (VIT), INDIA

Vellore Institute of Technology was established in 1984 as Vellore Engineering College by the Chancellor Dr G. Viswanathan. Since its inception, the institution has grown exponentially into an organization of repute and eminence. It was conferred the university status in 2001 to recognize its excellence in academics, research and extra-curricular initiatives. VIT has been consistently ranked among the best institutions of the country, and is aspiring to emerge as a global leader. VIT is recognised as an Institution of Eminence (IoE) by the Government of India. The Engineering and Technology subject areas of VIT are ranked 346 in the world and 9 in India as per the QS World University Rankings by Subject, 2022.

1.2 YOKOHAMA NATIONAL UNIVERSITY (YNU), JAPAN

Founded in 1874, Yokohama National University has emerged as a leading international educational hub. The institution fosters practical learning based on Yokohama's deep-rooted history and tradition as a thriving city of commerce, industry, and trade. The flexibility and

adaptability of YNU's vibrant campus enable the cultivation of globally competitive talents. More than 600 researchers at YNU carry out research in multiple disciplines and apply knowledge as an "international focal point of practical scholarship". As a result, it contributes to the welfare of society and ensures sustainable development of the world. YNU was bestowed with the prestigious Nihon-Ryugaku Awards, in the categories of Graduate Schools of the Eastern Japan division (2018 and 2020) and National & Public Universities of the Eastern Japan division (2017 - 2021). According to the QS World University Rankings, 2022, YNU has been ranked 801-1000 globally and 169 in Asia.

1.3 GDAŃSK UNIVERSITY OF TECHNOLOGY (GUT), POLAND

Established in 1970, Gdańsk University of Technology is an amalgamation of three educational institutions: the Higher Economics School in Sopot, the Higher Pedagogical School and the Higher Teacher Training School in Gdańsk. GUT's inclusion in global rankings, such as the QS World University Rankings and the Times Higher Education (THE) World University Rankings, attests to its high quality of education, rising international stature in scientifically published research, and an ever-growing calibre to innovate for a sustainable future. According to the 2019 CWTS Leiden Ranking, GUT is ranked fourth globally in terms of the participation of women in scientific publications at universities. In addition, the University is actively engaged in enhancing the quality of its scientific research and was appreciated as part of the "Excellence Strategy – Research University'' project of the Ministry of Science and Higher Education.

1.4 GOALS OF THE CONFERENCE

TECHNOSCAPE^{23} aimed to establish a sustainable environment by achieving the following goals:

- Bring together water professionals to address the existing state of water resources, contribute plausible ideas and inculcate better water management practices to meet the colossal demand.
- Offer a platform to share prodigious knowledge about advanced and sustainable technologies for water and wastewater treatment.

- Provide a holistic view on the latest water research and insights on some of the modern technologies such as IoT, Remote Sensing and Geographic Information System (GIS).
- Focus on trans disciplinary research to facilitate a systematic approach towards challenges.

TECHNOSCAPE[23] aimed to engage a broad spectrum of innovations and hoped to bring an amalgamation of ideas, inventions and research to the forefront.

1.5 CONFERENCE PARTNERS

Through a seamless integration of academic, industrial, and sustainability partners, Technoscape 2023 stands as a testament to the shared commitment of professionals from various fields and domains towards advancing sustainable technologies for water and wastewater treatment. These collaborators have played integral roles in shaping the conference goals, facilitating knowledge exchange, and fostering innovative solutions to address pressing global challenges in water management. Their unwavering dedication highlights the significance of interdisciplinary collaboration in guiding us towards a more sustainable future.

1.5.1 ACADEMIC PARTNERS

- **Thünen-Institute of Organic Farming, GERMANY**
  The Institute of Organic Farming is one of the 15 prestigious institutes comprising Thünen Institute, Germany. The prominence is set on developing systems of organic husbandry and are particularly focused on Cattle husbandry, Pig Production and Poultry systems.
- **Universiti Malaya, MALAYSIA**
  Commonly referred to as UM, the University of Malaya is a public research-based institution comprising 13 faculties with remarkable research backgrounds and 1819 publications in Scopus.
- **Universiti Tunku Abdul Rahman, MALAYSIA**

Universiti Tunku Abdul Rahman (UTAR) is a not-for-profit private university providing affordable quality education. Since the inaugural convocation in 2005, UTAR has graduated over 79,000 students from over 131 academic programmes.

- **Ulsan National Institute of Science and Technology (UNIST), SOUTH KOREA**
  UNIST is a warm and welcoming post-secondary institution located in the heart of Korea's largest industrial city, Ulsan, South Korea. The institute holds 3 colleges, 15 schools and 2 departments.

- **National Taipei University of Technology, TAIWAN**
  National Taipei University (also named Taipei Tech) has a century of experience in shaping exceptional technical professionals. They offer about 19 undergraduate programs, 30 master programs and 19 Ph.D programs within their 6 colleges.

1.5.2 INDUSTRIAL PARTNERS

- **Azumi Filter Paper Co., Ltd – JAPAN**
  Azumi Filter Paper Co Ltd is a renowned corporation in the industry as a producer of premium quality filtration products. They produce a wide range of vehicle based products with specialization in Automotive filtration products. Their supply chain links various countries in Asia, South America and Africa.

- **Hydranautics/Nitto – JAPAN**
  Hydranautics, a part of Nitto Global Membrane Division (GMD) is a membrane-based industry located in Japan. It is one of the most respected and experienced companies in the industry. With excellent customer service, Hydranautics had expanded their business being able to sell their products in all seven continents.

1.5.3 SUSTAINABILITY PARTNERS

- **RANITEC, India**
  The Ranipet Common Effluent Treatment (RANITEC) situated in Ranipet, India, contains tanneries to process raw skin hides to commercial products. To address pollution control, the plant was designed with a centralized treatment facility. The plant has about 60 effectively working tanneries.

- **Malaysian Water Board**

  The Malaysian Water Association (MWA) is an effort to collaborate individuals, organisations and spread awareness regarding the environmental concerns. Being a corporate member of the International Water Association (IWA), MWA connects to related organisations internationally.

- **African Water Association**

  African Water Association (AWA) is an African Institution with the objective to coordinate the search for the knowledge and latest development in the technical, legal, administrative as well as economic fields for Drinking water production, supply and sanitation. They primarily work on Water and Sanitation (WatSan).

2. HISTORY

TECHNOSCAPE has undergone significant growth since its inception in 2013 as a national conference. Originally limited in scope, it quickly expanded into an internationally recognized event by 2016, attracting speakers from prestigious organizations worldwide. This momentum led to the 2018 edition, TECHNOSCAPE[18] – An International Conference on Sustainable Water Resources – Innovations and Impacts, held at Vellore Institute of Technology (VIT) in India. The 2018 edition marked a collaboration between Yokohama National University, Japan, and VIT Vellore, with a focus on addressing global water challenges.

Affiliated with esteemed journals such as ASCE Journal of Environmental Engineering, Springer Environmental Chemistry Letters, H2Open Journal, Environmental Chemistry for a Sustainable World, and Sustainable Agriculture Reviews, TECHNOSCAPE[18] ensured widespread dissemination of research findings and insights. Centered around the theme of Sustainable Water Resources, TECHNOSCAPE[18] addressed various subtopics including Desalination, Membrane Technology, Reject Management, Process Water, Indian Water, and Safe drinking water, encompassing 35 distinct topics. The advisory board, comprising 59 experts from 27 different countries, offered diverse expertise in chemical engineering and other fields, providing comprehensive guidance for the conference. TECHNOSCAPE[18] also

featured a series of Guest Lectures covering diverse topics in chemical engineering and Sustainable Water Resources. These lectures provided students with valuable opportunities to interact directly with industry pioneers and gain insights beyond their regular coursework.

With each iteration, TECHNOSCAPE has seen a steady increase in attendance, now surpassing 200 participants. It has become a significant platform for exchanging knowledge and insights in water and wastewater treatment, demonstrating its relevance and impact in the field. TECHNOSCAPE's agenda emphasizes interdisciplinary collaboration, covering topics from various engineering disciplines such as chemical, biochemical, petroleum, and environmental engineering, as well as separations technology and sustainable water resources. This approach ensures participants gain holistic insights into the latest advancements and best practices. The joint venture between Yokohama National University and VIT Vellore showcases the conference's commitment to global collaboration for sustainable water management. By fostering dialogue and partnerships across borders, Technoscape contributes to advancing sustainable water management practices and shaping a resilient future.

3. TEAM TECHNOSCAPE

3.1 CHIEF PATRONS

Dr. G. Vishwanathan, Chancellor, Vellore Institute of Technology, INDIA

Dr. Izuhu Umehara, President, Yokohama National University, JAPAN

3.2 PATRONS

Mr. Sankar Vishwanathan, Vice-President, Vellore Institute of Technology, INDIA

Dr. Sekar Vishwanathan, Vice-President, Vellore Institute of Technology, INDIA

Dr. G V Selvam, Vice-President, Vellore Institute of Technology, INDIA

3.3 STEERING COMMITTEE

Dr. V.S. Kanchana Bhaaskaran, Vice-Chancellor, Vellore Institute of Technology, INDIA

Dr. Partha Sharathi Mallick, Pro-Vice Chancellor, Vellore Institute of Technology, INDIA

Dr. Jayabharathi T, Registrar, Vellore Institute of Technology, INDIA

Dr. Muruganandam L, Dean, Vellore Institute of Technology, INDIA

3.4 ORGANIZING COMMITTEE

Dr. Mahesh Ganesapillai, Vellore Institute of Technology, INDIA (Conference Chair)

Dr. Aruna Singh, Vellore Institute of Technology, INDIA (Conference Co-Chair)

Dr. Kazuho Nakamura, Yokohama National University, JAPAN (Conference Co-Chair)

Dr. Jakub Drewnoski, Gdańsk University of Technology, POLAND (Conference Co-Chair)

Dr. Govardhan K, Vellore Institute of Technology, INDIA (Programme Chair)

Dr. Mohana Roopan S, Vellore Institute of Technology, INDIA (Technical & Publications Chair)

Dr. Aslam Abdullah, Vellore Institute of Technology, INDIA (Finance Chair)

3.5 ORGANIZING COMMITTEE MEMBERS

3.5.1 Registration and Delegate Kit Committee

Faculty In charge	**Team Lead and Student Members**
Dr. Mahesh Ganesapillai	**Mr. Ramchandra Prajapat** Mr. Siddharth Poduval Ms. Sahana G Ms. Saakshi Srivastava Ms. Raksha Agarwal Ms. Khushi Yadav

3.5.2 Guest Care and Transportation Committee

Faculty In charge	**Team Lead and Student Members**
Dr. Govardhan K	**Ms. Divya Shivanand** **Mr. Aman Shrivastava**

	Mr. Kaushik Mr. Mohamed Suhail Mr. Siddharth Poduval Ms. Anjali Mary John Mr. Sarthak Sarang Bhoi

3.5.3 Technical Committee

Faculty In charge	**Team Lead and Student Members**
Dr. Mohanaroopan	**Ms. Ishita Sarkar** **Ms. Bidisha Mondal** **Mr. Ganpati S Nayak** Ms. Aditi Sridhar Ms. Saakshi Srivastava Mr. Jai Prakash Patel

3.5.4 Finance Committee

Faculty In charge	**Team Lead and Student Members**
Dr. Aruna Singh	**Ms. Anjali Sethumadhavan** **Mr. Prajwal Poonacha Pb**

3.5.5 Hall Management Committee

Faculty In charge	**Team Lead and Student Members**
Dr. Aslam Abdullah	**Ms. Trisha Daftari** **Mr. Ramchandra Prajapat** Mr. Sarvesh Ms. Udhaya Shri R Mr. Naren Kalepalli Ms. Aditi Iyer

	Ms. Disha Talukdar

3.5.6 Catering and Refreshments Committee

Faculty In charge	Team Lead and Student Members
Dr. Aslam Abdullah	**Mr. Prajwal Poonacha Pb** Ms. Anithaa S.E Mr. Zayan Abdul Razak Ms. Hemin Riya Henry

3.5.7 Panel Discussion Committee

Faculty In charge	Team Lead and Student Members
Dr. Mahesh Ganesapillai	**Mr. Prajwal Poonacha Pb** **Ms. Anjali Sethumadhavan** Ms. M. Valliammai Ms. Disha Talukdar

3.5.8 Inauguration and Valedictory Committee

Faculty In charge	Team Lead and Student Members
Dr Aruna Singh	**Ms. Priyanka Swaminathan** **Mr. Jayyant Kakkar** Ms. Aditi Sridhar Ms. M. Valliammai

3.5.9 Cultural Committee

Faculty In charge	Team Lead and Student Members
Dr. Velu	**Ms. Anjali Sethumadhavan** **Mr. Jayyant Kakkar**

4. CONFERENCE HIGHLIGHTS

TECHNOSCAPE[23] was conducted in Vellore Institute of Technology (VIT), Vellore, INDIA, campus from 14 to 16 December 2023, on 'Sustainable Technologies for Water and Wastewater Treatment'

- The conference was affiliated with three prestigious Scopus indexed journals, namely, Environmental Science and Pollution Research (ESPR), Environment Monitoring and Assessment (EMAS), and Chemical Engineering Communications (CEC).
- The International Advisory Committee (IAC) comprised of 51 members, from 22+ countries, from various domains and fields.
- The official logo of TECHNOSCAPE[23] and the promo video of the conference was launched on 15 February, 2023, in the presence of the Dean, School of Chemical Engineering (SCHEME), faculty organizers and student committee members.
- On the occasion of World Water Day, a Poster and Photography competition was conducted as the first event under the banner of TECHNOSCAPE[23]. Through this event, a platform was provided for participants and water enthusiasts to capture the true essence of Water through their work of art, either in the form of a poster or a photograph, followed by an exhibition of all the submissions.

4.1 CONFERENCE THEMES

The conference was anchored on Sustainable Technologies for Water and Wastewater Treatment, comprising of 22 sub-themes under 6 pivotal themes, Socio Economic Initiatives, Smart Sensing Technologies, Circular Economy and Resource Recovery, Processed Water Technologies, Sanitation and Urban Design, and Separation Technologies:

- Carbon Footprint Reduction
- Advancements in Membrane Technologies
- Resource Recovery
- Circular Economy

- IoT incorporated Water Resource Management
- Integration of AI and ML in Water Technologies
- Advancements in Desalination
- Water Governance
- Socio-Economic issues concerning Wastewater Management
- Water Sensitive Urban Design
- Water Sanitation and Hygiene (WASH)
- Ecological Sanitation
- Hydroponics and Smart Farming
- Water-Energy-Land-Food nexus
- Impact of COVID-19 on Wastewater Management
- GIS and Remote Sensing in Water Monitoring
- Recovery and Remediation of Marine oil-spills
- Green Technologies for Crude Oil Processed Water Treatment
- Produced Water Treatment
- Process Water Treatment Technology
- Water Reclamation from Industrial Effluents
- Sustainable Initiatives to Achieve Zero Liquid Discharge

4.2 SPONSORSHIP

Without the generous contribution and support of the sponsors of the conference, TECHNOSCAPE23 would not have been possible. Their commitment to our cause has not only helped in organizing this event but has also significantly contributed to its success. We extend our sincerest thanks to each sponsor for their partnership and dedication to advancing the goals of TECHNOSCAPE23.

- **Platinum Sponsors**
  - KH Group
- **Gold Sponsors**
  - Prara Leathers
  - Good Leather
- **Silver Sponsors**
  - BIAL
  - DecorX
  - SBI
- **Other Sponsors**
  - Asia Apparels
  - Usha Surgicals
  - IOCL
  - Prakash Dyechem
  - Amit Nanavati
  - Ayana
  - Mr. Pathi
  - Ashish
  - Upanyas
  - Swami's Agencies
  - RMH Control System
  - Lexcru Water Tech

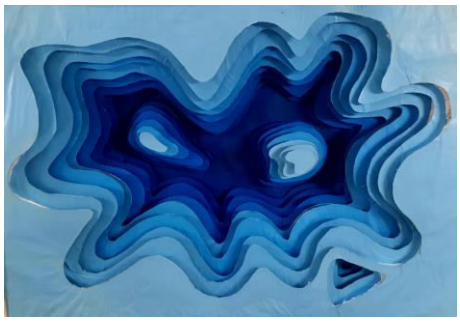
4.3 ART INSTALLATIONS

Throughout the conference, the attendees also had the opportunity to appreciate art installations displayed across the campus, each symbolizing the ethos of Technoscape and its dedication to sustainability. Notable among these installations were Quilling, Mural Art, Pot Display, and Aureole, each offering unique perspectives on sustainability and water management.

Abhyudaya

"Abhyudaya" stands as an artistic marvel. Meticulously crafting the SDG circle from the fibers of recycled paper, this installation not only embodies the principles of environmental responsibility and resource conservation but also signifies our collective dedication to the Sustainable Development Goals. "Abhyudaya" weaves together the intricate tapestry of recycled paper, symbolizing the interconnectedness of water and sustainability and invites all attendees to engage with its eco-friendly message.

Amritavarshini

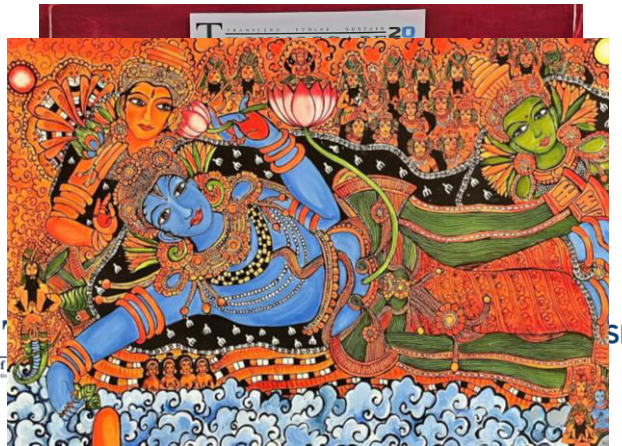


Layers of water transcend the canvas, each carrying its own profound significance. From the sparkling surface, mirroring our world's facade, to the enigmatic depths concealing the untold secrets, "Amritavarshini" signifies the future of water. It serves as the nucleus of TECHNOSCAPE23, where discussions pivot on preserving, understanding, and safeguarding the legacy of water for generations to come.

AlaiPayuthey

Kanagawa Oki Nami Ura, a place that binds the wrath of nature and its beauty together. The tranquility of the sea with the perturbation of waves, the gentle caress of breeze with the fear of destruction, and the gaze at Mount Fuji with the impeccable unpredictability of a journey called life is captivating. The waves of life and water, intertwined into the canvas of quills, shapes a poised realm where time slows and the world turns into colours of serenity and wonder.

Aikkiyam



Your beautiful sight is halted at "Aikkiyam" - the profound portrayal of the charm of TECHNOSCAPE23 - our dear delegates and dignitaries, with a mosaic of wisdom and

innovation. It is not just a directory; it is a symbol of the imaginative potential that unites us, weaving together the past, present, and the future of water in our quest for a sustainable world at a place where each of us reunite - TECHNOSCAPE23.

Anantha Shayanam

Sree Anantha Padmanabha Swami, embodying Lord Vishnu's divine essence, symbolizes the profound connection between Hindu spirituality and the symbolic significance of water. Lord Vishnu, as the preserver, reflects water's gentle yet powerful nature. His cosmic preservation aligns with water's rejuvenating qualities in Hindu philosophy. Understanding the interplay between Lord Vishnu, sacred waters, and Hinduism inspires us to navigate life's currents with grace and purpose, upholding tranquility, unity, and harmony.

5. CONFERENCE WORKFLOW

With the participation of 76 national delegates and 37 esteemed international delegates and guests, TECHNOSCAPE has truly transcended borders, becoming a global melting pot of knowledge and progress.

5.1 INAUGURAL CEREMONY

The inaugural ceremony of TECHNOSCAPE23 commenced with esteemed guests gracing the occasion. Our Hon'ble Chancellor, Dr. G. Viswanathan, inaugurated the conference, underscoring its significance. Smt. A. Dhanalakshmi, Joint Secretary of the Department of Science & Technology, Government of India, served as our Chief Guest, emphasizing the urgent need to address arsenic contamination in drinking water. Mr. M. Abdul Wahab, Managing Director, KH Exports India Pvt. Ltd., was the Guest of Honour. Other dignitaries present included Vice Presidents, Mr. Sankar Viswanathan and Dr. G.V. Selvam; Vice-Chancellor, Dr. V. S. Kanchana Bhaaskaran; Pro-Vice Chancellor, Dr. Partha Sharathi Mallick; Registrar, Dr. T. Jayabarathi; and Dean SCHEME, Dr. Muruganandam L.

5.2 PANEL DISCUSSION

TECHNOSCAPE has always been at the forefront of fostering knowledge exchange and collaboration in the realm of environmental sustainability and technological advancements. In its fifth edition, a panel discussion was conducted with professionals from various domains, assembling a panel of experts from NGOs, industries, academic communities, and more. The discussion was on the topic "Is Water-Food-Energy Nexus: a viable option to balance Industrial Needs and Environmental Sustainability?", reflecting our commitment to addressing the complex challenges associated with water management, particularly in the context of industrial needs and the imperative for environmental sustainability. The discussion was joined by several notable professionals:

- Ms. Marcella D'Souza, Director, WOTR, INDIA (MODERATOR)
- Mr. Sakthiaswaran K, Federal Government of Malaysia, MALAYSIA
- Dr. Rangaiah GP, Professor Emeritus, NUS, SINGAPORE
- Mr. Md. Zafarullah, Managing Director, RANITEC, INDIA
- Dr. Hideaki Yoshitake, Professor, Yokohama National University, JAPAN
- Dr. Jennifer Tamayo, FPDRI, THE PHILIPPINES
- Mr. Manikandan Vasudevan, Hydranautics, INDIA

5.3 KEYNOTE SPEAKERS

Throughout the event, attendees had the privilege of participating in 15 enlightening keynote sessions, where pioneering thinkers and visionaries from over 6 countries shared their insights and expertise. These esteemed keynote speakers illuminated diverse perspectives on sustainable water management, urging delegates to heighten their awareness of the pressing global water crisis. Each keynote session served as a catalyst for critical reflection and spurred discussions on how to address the challenges facing water sustainability. By sharing their knowledge and experiences, the keynote speakers left an indelible mark on the conference, igniting a collective commitment to safeguarding our planet's most precious resource.

Keynote I - Professor G.P. Rangaiah

Professor G.P. Rangaiah, an Emeritus Professor in the Department of Chemical and Biomolecular Engineering at National University of Singapore, also serves as Adjunct Professor in School of Chemical Engineering at Vellore Institute of Technology. Specializing his research in the domains of process modelling, process optimization, pinch analysis, heat transfer and so on, he was amongst the top 5% faculties of NUS.

Keynote II - Prof. Taro Arakawa

Prof. Taro Arakawa is an Associate Professor at the Faculty of Engineering, Division of Intelligent Systems Engineering, Yokohama National University. Further broadening their horizons in the research domains of optical waveguides, compound semiconductors, Molecular Beam Epitaxy and so on, sir has over 150 publications under his name, he also has received 6 prestigious awards, making him a master of his field.

Keynote III - Prof. Hiromitsu Takaba

Prof. Hiromitsu Takaba, an esteemed academic at Kogakuin University, Japan, has an eminent career having notable contributions in the fields of multiscale modelling in fuel cells, water purification, lithium-ion batteries, and membrane processes. Recognized and acknowledged for his work with prestigious awards, sir has over 280 publications, showcasing his immense dedication and knowledge.

Keynote IV - Prof. Hideaki Yoshitake

Prof. Hideaki Yoshitake, a renowned academician holding the position of Professor at Faculty of Engineering, Division of Materials, Science and Chemical Engineering, Yokohama National University, Japan. Nanotechnology, green sustainable technology, environmental chemistry are some of his varied research domains. Having authored more than 132 papers, and various books and chapters, Sir has contributed significantly to the scientific community. Furthermore, he is a part of the Chemical Society of Japan, displaying his commitment towards the community.

Keynote V - Dr. Sivakumar D

Dr. Sivakumar D is the General Manager of Ranipet Tannery Effluent Treatment Company (RANITEC), a Common Effluent Treatment Plant for MSME Tanneries in the Ranipet

Region. Having an experience span of more than 24 years in tannery effluent treatment, he played a vital role in Implementing the Operation and Maintenance of the Zero Liquid Discharge (ZLD) system. He is also entrusted with the implementation of the ZLD system.

Keynote VI - Dr. Kazuho Nakamura

Dr. Kazuho Nakamura is a consummate Associate Prfoessor in the Faculty of Engineering, Division of Materials, Science and Chemical Engineering, Yokohama National University, Japan. His broad field of research topics include, process monitoring and control systems, physical chemistry of surface diagnosis, membrane seperation, and filteration. Having a noteworthy academic career, he has over 60 publications and has received the prestigious JPI Award for Distinguished papers, showcasing is academic as well as scholarly abilities.

Keynote VII – Prof. Satinder Kaur Brar

Prof. Satinder Kaur Brar is a distinguished environmental engineer and the James and Joanne Love Chair in Environmental Engineering at York University, Canada. She is an eminent researcher with an impressive H-index of 65, recognized nationally and internationally for her exceptional contributions to the fields of waste value-addition and emerging contaminant removal. She not only serves as an inspiring leader but also distinguishes herself as a devoted mentor, boasting an impressive track record of guiding 69 students and securing $10 million in research funding.

Keynote VIII – Dr. Jennifer Tamayo

Prof. Jennifer Tamayo is a Senior Science Research Specialist affiliated with the Department of Science and Technology (DOST) at the Forest Products Research and Development Institute in the Philippines. Her noteworthy achievements include presenting a paper at the Asian "Green Economy" Forum in 2012, where she delved into innovative methods for cost-effective reduction of heavy metal deposits in mine tailings. With over 25 years of dedicated experience, she has made significant contributions to research focused on the conservation of natural forest resources.

Keynote IX – Prof. Jacek Czerwinski

Jacek Czerwinski is a distinguished academician and researcher currently holding the position of Professor at the Lublin University of Technology, Poland. His focus lies in the examination of environmental contaminants and their transformation products, delving into the behavior, fate, and impact of various pollutants on the environment. Professor Czerwinski's research plays a pivotal role in developing effective strategies for environmental protection and sustainability.

Keynote X – Prof. Hem Raj Pant

Hem Raj Pant is currently employed as a Professor at the Institute of Engineering, Tribhuvan University, Nepal. Prof. Pant's research is centred around the nanofabrication of biocompatible and functional polymers, as well as the modification and processing of natural and synthetic polymers. Notably, his work extends to the development of polymer composites for water filtration and tissue regeneration. His outstanding contributions have earned him a Research Fellowship from the Healthcare Development Project, Ministry of Education, South Korea.

Keynote XI – Prof. Jakub Drewnowski

Professor Jakub Drewnowski stands as a highly accomplished and esteemed academician, currently holding the position of Professor at Gdansk University of Technology in Gdańsk, Poland. Prof. Drewnowski specializes in Water and Wastewater Treatment, showcasing a profound dedication to education and mentorship. Throughout his illustrious career, he has made significant societal contributions through research focusing on diverse aspects of water treatment and management, Water Quality, and Environmental Impact Assessment.

Keynote XII – Ir. Ts. Sakthiaswaran Kaliappan

Ir. Ts. Sakthiaswaran Kaliappan currently holds the position of Assistant Director (Mechanical) within the Federal Government of Malaysia, leveraging his extensive background in Mechanical Engineering. His diverse expertise spans areas such as Air Conditioning, Building Services, Energy Technology, Environmental Engineering, Waste Water, Water Resources Engineering, and Ergonomic System Design. His dedication and proficiency position him as a valuable asset in contributing to the developmental goals of his nation.

Keynote XIII - Prof. Matsuda Hiroyuki

Professor Hiroyuki Matsuda is a Professor at the College of Science and Technology, Department of Materials & Applied Chemistry, Nihon University. Being a multipotentialite in the fields of research such as Thermophysical properties, he has received the Award of Honour for his utmost dedication in the area. Additionally, Professor Matsuda has more than 10 papers published recently, adding to his previous high tally of past published papers.

Keynote XIV - Prof. Tsuji Tomoya

Professor Tomoya Tsuji, an illustrious researcher, is a Professor in the Malaysia-Japan International Institute of Technology, Universiti Teknologi Malaysia. Having a wide range of research interests, sir has worked on various grants as a Principal investigator. In addition to this, Professor Tsuji has more than 50 research articles and more than 25 Books and Chapters published under his name showing his keen knowledge and dedication towards his field.

Keynote XV - Prof. Tochigi Katsumi

Professor Katsumi Tochigi, is an Emeritus Professor of Chemical Engineering, in the Department of Materials and Applied Chemistry, Nihon University. Having his major field of research in Chemical Engineering Thermodynamics, Sir has done wonders in this field. With more than 15 Books and Chapters and more than 100 research articles under his belt, Professor Tochigi is a master in his field. Apart from this, he has also received Global Awards for his constant discipline and excellence in the field of Chemical Engineering.

5.4 TECHNICAL SESSIONS

Over the course of two dynamic days, TECHNOSCAPE featured a comprehensive lineup of 13 technical sessions, serving as platforms for the presentation of over 80 research papers. Covering six pivotal themes, these sessions provided invaluable insights and discussions on pressing issues in water and wastewater management.

The technical sessions delved into a range of critical topics, including Socio-Economic Initiatives, Smart Sensing Technology, Circular Economy & Resource Recovery, Processed Water Technologies, Sanitation & Urban Design, and Separation Technologies. Each session was meticulously curated to address specific aspects of sustainable water management, catering to the diverse interests and expertise of attendees.

Distinguished chairs presided over the sessions, guiding discussions and facilitating knowledge exchange among participants. Their expertise ensured that each session was informative, engaging, and conducive to collaborative learning.

5.5 VALEDICTORY CEREMONY

The valedictory ceremony of TECHNOSCAPE23 commenced with esteemed guests gracing the occasion. Shri. Chittaranjan Meher, Country Leader of the Sustainability Software Business Unit, Technology Sales at IBM India/South Asia, served as our Chief Guest, inspiring us with his words of wisdom. Prof. Jakub Drewnowski from Gdansk University of Technology, Poland, Co-Chair of TECHNOSCAPE23, embraced the evening with his welcome address. It was followed by a dedicated thank-you speech to all the sponsors for their support. Dr. Aruna Singh, Co-Chair of TECHNOSCAPE23, presented a detailed report of the conference, followed by addresses from Dr. Mahesh Ganesapillai, Conference Chair of TECHNOSCAPE23, and Dr. Govardhan K, Conference Programme Chair of TECHNOSCAPE23. Other dignitaries present included the Pro-Vice Chancellor, Dr. Partha Sharathi Mallick, and the Dean of SCHEME, Dr. Muruganandam L. With the vote of thanks, we concluded the evening.

5.6 OTHER ACTIVITIES

At TECHNOSCAPE, the essence of cultural celebration was palpable beyond the confines of boardrooms and lecture halls. RAAGAMUDRA, our cultural fest, mesmerized attendees with a vibrant showcase of Indian cultural heritage. Through captivating dance performances, traditional attire displays, and soul-stirring melodies, RAAGAMUDRA underscored the richness and diversity that epitomizes Indian culture. It served as a poignant reminder that embracing diversity fosters creativity and innovation. The pinnacle of our cultural festivities culminated in KESAR, our Gala Dinner, a culinary extravaganza that delighted the senses and forged bonds of camaraderie among attendees. Guests indulged in a gastronomic journey, savoring the exquisite flavors and delicacies of Indian cuisine. Against the backdrop of lively folk dances representing various states, attendees donned traditional attire, symbolizing the kaleidoscope of diversity that defines our nation.

As a gesture of inclusivity, language cards featuring phrases from different Indian languages were presented to our international delegates, facilitating communication and fostering a sense of belonging. Additionally, various interactive games and activities were organized, further enhancing the spirit of camaraderie and friendship among attendees. These activities encapsulated the essence of cultural celebration and camaraderie at TECHNOSCAPE, leaving a lasting impression on all who attended.

During their stay, our esteemed international delegates were also treated to a cultural visit to the iconic Golden Temple of Vellore, immersing themselves in the grandeur and spirituality of this revered landmark. This experience provided a glimpse into the cultural tapestry of India and facilitated cross-cultural exchange and understanding.

6. SCOPE OF IMPROVEMENT

While the efforts were put in to ensure a smooth conduct of the conference with the available resources, there could be certain things that can be modified or added for the editions of conferences to come. Those are as follows:

6.1 REGISTRATION AND DELEGATE KIT COMMITTEE

Sl.No	Area	Proposed Plan of Action
1.	Lack of workforce required to attend the new registrations.	Initial team should be expanded, which was constrained this edition, to tackle any on-site instances.

6.2 GUEST CARE AND TRANSPORTATION COMMITTEE

Sl.No	Area	Proposed Plan of Action
1.	An urgent healthcare situation was observed for a few delegates and keynote speakers.	For events of this stature, an emergency medical vehicle should be kept on standby.
2.	Inadequacy of transport vehicle for guests' travel.	Prior booking with regular coordination with a week before should be there to ensure vehicles' availability

6.3 WEBSITE COMMITTEE

Sl.No	Area	Proposed Plan of Action
1.	Incorrect payment amount for delegates was visible and paid, which had to be reimbursed	Specific registration data, associated with regi on and profile could be provided to the delega tes, to avoid inaccuracy.

6.4 FINANCE COMMITTEE

Sl.No	Area	Proposed Plan of Action
1.	Delayed reimbursement of expenses	Self-slips of travel and other amenities for which bills aren't provided should be made and within 3 days, reimbursement could be ensured.

6.5 CATERING AND REFRESHMENTS COMMITTEE

Sl.No	Area	Proposed Plan of Action
1.	One day's food was found to be unhealthy for specific delegates and members, who got ill	Food could have a testing procedure and food particulars for each guest should be known

6.6 INAUGURATION AND VALEDICTORY COMMITTEE

Sl.No	Area	Proposed Plan of Action
1.	Instant changes in the schedule were observed that could affect the flow and presentation	Prior preparation with adequate measures of variable changes, prior to the event

6.7 CULTURAL COMMITTEE

Sl.No	Area	Proposed Plan of Action
1.	Delay in the schedule due to delay in previous events and set-up	Beforehand preparations with frequent checks for equipment could ensure this

7. SALIENT OUTCOMES

- A holistic platform for researchers, policymakers, budding scientists, and water industry professionals, associated with water and wastewater treatment, was set-up.
- Individuals, not only from INDIA but from 24 countries across the globe, gathered to witness and contribute to discussions that upheld the necessity to treat water sustainably.
- Through each programme conducted, be it the paper presentation sessions or the cultural night event, the conference ensured a space for attendees to interact, build a network, and hone their knowledge and skills.
- The motto, to ensure each step with utmost excellence, provided a platform for the organising members to whet their organising skills while learning about international relations, scientific presentation procedures, managerial skills, and above all, team cooperation.