



## CSIR for Connect, Collaborate, Converge and Convert (5C) for Global Sustainable Development

Science Summit at the 79 United Nation General Assembly (SSUNGA79)

### CSIR's Sessions

## “CSIR for Connect, Collaborate, Converge and Convert (5C) for Global Sustainable Development”

Science Summit at the 79 United Nation General Assembly

Date: 18 and 19 September 2024; Time: 1430 hrs to 1700 hrs (IST)



### About the Organization: Council of Scientific and Industrial Research (CSIR), India

The Council of Scientific & Industrial Research (CSIR) under the Department of Scientific and Industrial Research (DSIR) of the Ministry of Science and Technology, Government of India, established in 1942, is the largest industrial R&D organization in India. CSIR has 37 multidisciplinary R&D institutes located across India that are working in a wide spectrum of S&T fields from oceanography, geophysics, chemicals, drugs, genomics, biotechnology and nanotechnology to mining, aeronautics, instrumentation, environmental engineering and information technology. SCIMAGO Institutions Rankings 2023 has ranked CSIR, India **61<sup>st</sup> among 1747 government institutions worldwide** and is the only Indian organization among the top 100 global government institutions. Further, CSIR holds **7<sup>th</sup> rank in research** and **4<sup>th</sup> rank in the societal category** in Asia among 384 government organizations. CSIR leads the country at the **1<sup>st</sup> position in overall research and societal categories** among government institutions.

The CSIR institutes are being manned by about 9000 highly skilled S&T manpower. Its need-based and industry-focused R&D and technology development, strength in basic and applied research, and world-class R&D infrastructure have contributed immensely to India's prowess in S&T as measured by patents, publications and innovations. CSIR publishes more than 5,000 papers annually in peer-reviewed International journals (SCI). Presently, CSIR has a patent portfolio of 1469 patents in force in India. Total foreign patents are 990 out of which 444 are unique patents. 318 no. of IPs have been licensed to industry between April 2021 to August 2024

CSIR has been contributing enormously to the industrial, societal and economic development and growth of India for over eight(8) decades now. CSIR has played a crucial role in overcoming many challenges and crisis faced by India, from promoting self-sufficiency in the face of technology denials, to handling natural disasters such as earthquakes, floods, pandemic, through appropriate technological solutions.

CSIR has been hugely contributing to the UN Sustainable Development Goals. The Session on “**CSIR for Connect, Collaborate, Converge and Convert (5C) for Global Sustainable Development**” will not only briefly present these contributions but will also deliberate on strengthening South-South collaborations. The sessions can be viewed at

#### Youtube

<https://www.youtube.com/csirindia1942>

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Website: [www.csir.res.in](http://www.csir.res.in) ;

Reach out: Dr (Mrs) Rama Swami Bansal, Head, International S&T Affairs Directorate, CSIR, India at Telephone +91-11-23736212; Email: [rsb@csir.res.in](mailto:rsb@csir.res.in)

**CSIR for Connect, Collaborate, Converge and Convert (5C)  
for Global Sustainable Development**  
Science Summit at the 79 United Nation General Assembly (SSUNGA79)

## PROGRAM

**Day 1: 18 September 2024; Time: 14:30 hrs to 17:00 hrs (IST)**

Register : <https://sciencesummitunga.vfairs.com/en/registration-form>

Theme/Title	Topic & Speaker	Time, hrs	About the talk	Photograph of the speaker	Profile of the Speaker	Email of the speaker
<b>Inaugural Session</b>	<b>Welcome and Introduction to the meeting</b> <i>Dr Rama Swami Bansal, Head, ISTAD, CSIR</i>	1430	Welcome and Introduction to the scientific meeting titled CSIR for Connect, Collaborate, Converge and Convert (5C) for Global Sustainable Development”		Dr Rama Swami Bansal joined the Council of Scientific & Industrial Research (CSIR), Ministry of Science & Technology, Government of India in 1997. She is the Head of the International S&T Affairs Directorate (ISTAD) of the CSIR. She has been fostering S&T Cooperation of CSIR institutes with their partners abroad and has successfully launched several cooperation programmes. Dr Bansal is assisting Director General of CSIR in promoting specific international networking. She has a rich experience of nearly 30 years in management of International S&T Cooperation and Coordination of International Bilateral and Multilateral programmes. earlier at Department of Science & Technology, in CSIR and also as an S&T Counselor and Head of the Science & Technology Wing of the Embassy of India in Moscow, Russia during June 2011 to June 2015.	rsb@csir.res.in
	<b>Overview of CSIR</b> <i>Dr N Kalaiselvi, Director General, CSIR</i>	1435	Inaugurating the meeting and sharing an Overview of CSIR to kick-start the deliberations.		Dr N Kalaiselvi assumed charge as Secretary, DSIR and Director General, CSIR, New Delhi on August 8, 2022. Dr. Kalaiselvi is the first women Director General of CSIR. Prior to taking over as Secretary, DSIR and DG, CSIR, she was working as Director, CSIR-Central Electrochemical Research Institute, Karaikudi. Dr Kalaiselvi (born: February 5, 1967) obtained bachelor's degree in Chemistry from Government Arts College Tirunelveli, obtained her Post Graduate Degree in Chemistry from Government Arts College Coimbatore and did her PhD at	dg@csir.res.in

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Annamalai University, Chidambaram.

Dr Kalaiselvi's research work of more than 25 years is primarily focused on electrochemical power systems and in particular, development of electrode materials, custom designed synthesis methods, optimization of reaction parameters and electrochemical evaluation of in-house prepared electrode materials for their suitability in energy storage device assembly. Dr Kalaiselvi has served as Nodal Scientist for project MULTIFUN [Multifunctional Electrodes and Electrolytes for Futuristic Technologies, sponsored by CSIR]. She played instrumental role in implementation of e-mobility in India. Dr. Kalaiselvi has more than 135 research papers and 6 patents to her credit. She is recipient of many prestigious awards including Most Inspiring Women Scientist Award.

### Day 1: Scientific Session on "Technologies for Sustainable Development": 1440 hrs -1700 hrs

#### Session 1 - Affordable Healthcare for Global Society (SDG 3 – Good health and well-being) Chair - Dr Vinay K Nandicoori, Director, CSIR-CCMB

Overview of the Session	Dr Vinay K Nandicoori, Director, CSIR-CCMB	1440			<p>Dr Vinay Nandicoori is a Molecular and Cellular Biologist who has contributed to delineating the signalling networks in Mycobacterium tuberculosis (Mtb). He did his Masters in Biotechnology at the Indian Institute of Technology, Bombay and his Ph.D. in Molecular and Cellular Biology from the Indian Institute of Science, Bangalore. He was a Postdoc at Texas A&amp;M University for 3 years and the University of Virginia for three and half years before returning to India in 2004. In 2021 he moved to the Centre for Cellular and Molecular Biology, Hyderabad, India as the Director, where he established his lab. His research interest is to delineate the kinase-mediated signalling networks in Mtb. In addition, his lab is also interested in identifying novel drug-resistant mechanisms, deciphering transcription regulation and identifying novel targets for host-directed therapy. He has 80 research papers to his name in international journals of high repute. He holds the prestigious</p>	director@ccmb.res.in
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1. Generic drugs	Dr Srinivasa Reddy, Director, CSIR-IICT	1445	<p>The Indian pharmaceutical industry made significant impact across the globe over the past few decades and has been instrumental in supplying generic drugs to the global market. Today, we provide generic medicines to &gt;200 countries in the world which accounts for supply of almost 20 per cent of the medicines consumed by the world. More than 700 US FDA approved sites and more than 300 EUGMP complied units are located in India. It is worth mentioning that 90% of WHO pre-qualified APIs are sourced from India and 65% of WHO's vaccine requirements are sourced from India. Indian pharma companies are continuously producing high quality, cost-competitive intermediates and API to both the domestic and international markets. All this was possible because of collaborative efforts (in particular in early days of generic growth in India) between the Council of Scientific and Industrial Research (CSIR) and indigenous private companies over the decades and paved the way for a revolution in the domestic pharmaceutical industry. Indian Institute of Chemical Technology (IICT), Hyderabad; National Chemical Laboratory (NCL), Pune and Central Drug Research Institute (CDRI), Lucknow -Institute of Microbial Technology (IMT), Chandigarh of CSIR played major role for the growth of Indian pharma sector. I will be discussing about a few success stories and the way forward on affordable healthcare.</p>		<p>Dr D Srinivasa Reddy, Director of CSIR-Indian Institute of Chemical Technology (CSIR-IICT) based in southern Indian city Hyderabad. He was trained as an organic chemist and gained experience in medicinal chemistry and drug discovery from pharmaceutical industry. Dr. Reddy is best known for his application oriented organic synthesis towards human wellbeing. His research interests are on total synthesis of biologically active natural products and medicinal chemistry using "silicon incorporation approach". His research group accomplished total synthesis of more than 50 natural products with impressive biological properties. His group developed a cost-effective process route for drugs Ivacaftor (cystic fibrosis) and Lifitegrast (ophthalmic). One of the molecules (Licogliflozin) discovered by his team in industry is currently undergoing human clinical trials (Phase-II). Dr. Reddy is an author of &gt;140 publications and an inventor in more than 35 patents. Dr. Reddy recognized with many prestigious recognitions including J. C. Bose National Fellowship and Shanti Swarup Bhatnagar Prize. Over all, he brings experiences from both pharmaceutical industry and Govt national laboratories.</p>	director@iict.res.in

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<p>2. A multipronged approach to tackling Antimicrobial Resistance (AMR)</p>	<p>Dr Radha Rangarajan, Director, CSIR-CDRI</p>	<p>1457</p>	<p>The burden of bacterial disease has been growing globally due to the spread of multidrug resistance (MDR). WHO has declared antimicrobial resistance (AMR) as the top 10 greatest threats to human health. In 2019 alone, ≈1.2 million deaths were due to resistant bacterial infections and 4.95 million deaths were associated with multidrug resistant bacterial infections. The burden is disproportionately high for low and middle-income countries. Mortality rates are highest in sub-Saharan Africa, South Asia, and Southeast Asia. To combat AMR, a multipronged effort is required, which includes development of new drugs and diagnostics and adopting more extensive surveillance backed by contemporary technologies. Several CSIR laboratories are working actively on these aspects, with novel technologies or products having completed validation at the laboratory scale. Collaborations to test these solutions more widely are being sought so that AMR's impact on the health of people can be urgently addressed.</p>		<p>Dr Radha Rangarajan is currently Director, Central Drug Research Institute, a constituent laboratory of CSIR. She has been involved in translational research and product development, with antimicrobial resistance (AMR) as a focus, for the last two decades.</p> <p>Dr Rangarajan worked in the Drug Discovery division of Dr Reddy's Laboratories between 2003 and 2009 in several roles. Thereafter, she co-founded and led Vitas Pharma, a company dedicated to the discovery and development of antibiotics. In 2020, she took on the role of Chief Technology Officer at HealthCube, a public health focused medical devices company.</p> <p>Dr Rangarajan obtained her B.S degree in Biology from Stanford University, M.S. from University of Michigan, Ann Arbor and Ph.D. from the Rockefeller University. She was a postdoctoral fellow at the Harvard School of Public Health.</p>	<p>director@c dri.res.in</p>
<p><b>Discussion &amp; Q&amp;A</b></p>		<p>1509</p>				

**Session 2 - Food and Agriculture (SDG 1 – No poverty and SDG 2 – Zero hunger)**  
**Chair - Dr Sridevi A Singh, Director, CSIR-CFTRI**

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<p>Overview of the Session</p>	<p>Dr Sridevi A Singh, Director, CSIR-CFTRI</p>	<p>1515</p>	<p>Food processing innovations play key role in achieving Sustainable Development Goals particularly, ending poverty (SDG1) and alleviating hunger and improving food security (SDG2). Growing world population faces the grand challenge of new food technologies to deliver healthy diets that are accessible to all people while safeguarding planetary health. Minimising agrochemical use in the value chain and supporting producers in transitioning to sustainable and regenerative agricultural practices facilitates in maintaining productivity while protecting ecosystems and human health in addition to preserving soil and other natural resources. Affordable and efficient processing of foods works in a complex nexus with the challenges of food security, malnutrition, consumer protection, and environmental impact. Innovative approaches towards latest food processing technologies such as product innovation in Ayur foods, bio-based intelligent food packaging, shelf life extension technologies/ export protocols for perishable fresh fruits and vegetables, green food processing technologies, environmental life cycle assessment and reduction in carbon/ water footprint, waste valorization and circular economy relevant to food processing requires greater attention. A large number of promising agricultural and food technologies find wider utilisation in the coming years in different contexts. These innovations can help advance multiple policy objectives in the context of sustainable development. The speakers will share academic and industrial perspective on CSIR affordable Food Technologies.</p>		<p>Dr Sridevi Annapurna Singh, is currently serving as Director, CSIR-Central Food Technological Research Institute. She has a Master degree in Food Technology and PhD in Food Science from the University of Mysore, Mysuru. She has over 3 decades of research experience working in the areas of supplementary foods for children, applications of enzymes for better digestibility, characterization and understanding the structure and function relationship of proteins and unravelling the mode of action of nutraceuticals. She has been focusing on alleviating malnutrition in the country through sourcing proteins from unconventional sources and underutilized grains and carrying out impact studies in association with women and child development departments of various state governments. Sridevi Annapurna Singh has published well-cited papers in peer-reviewed journals, has several patents-backed technologies in the area of protein ingredients and foods that have been commercialized, besides guiding PhD and Masters students. She has been conferred the Karnataka State and Technology Academy fellowship. Earlier, she has been the recipient of DAAD and INF-Kraft fellowships. She is a member in several national committees of DBT, DST and FSSAI.</p>	<p>director@cftri.res.in</p>
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1. Affordable food technologies for sustainable future

Dr Umesh Hebbar,  
Chief Scientist, CSIR-  
CFTRI

1520

Adopting affordable & efficient technologies for processing is critical to reduce post-harvest losses of agricultural products, through preservation & value addition, which in turn contributes to food and nutrition security, besides enhancing food quality and safety. The projected increase in global demand for food (100% by 2050), need to be met majorly from affordable and innovative technologies. Food processing technologies are now driven towards low cost processing, reducing environmental impact, adaptation to modern technological tools, mechanization, effective supply chain management, valorization of food waste, with an aim to enhance quality, reduce carbon & water footprint, promote circular economy and achieve clean, sustainable production. CSIR technologies exemplify affordable solutions, addressing key challenges in food industry. Minimal processing, use of natural preservatives & low cost, under-utilized raw materials; low cost machineries for field level applications; non-conventional energy source based processing; green technologies (membrane and athermal); waste management (microbial, ozone) & valorization (fiber, enzymes); modified atmosphere packaging and biodegradable/edible packaging offer affordable solutions to global need. Also, technologies for fortification to improve nutritional security, foods for health and wellness and kits for quick detection of adulterants, significantly contribute towards



Dr H Umesh Hebbar has Chemical Engineering Degree from Bangalore University and Ph.D. in Biotechnology from University of Mysore. He has 6 years of Industrial and 27 years of Research & Teaching experience and, presently holding the position of Chief Scientist and Head, Food Engineering Department, in Central Food Technological Research Institute, (CFTRI) Mysore, which is one of the premier food research institutes of Council of Scientific and Industrial Research (CSIR), Ministry of Science and Technology, Government of India. His areas of expertise are Electromagnetic radiation based processing of foods and liquid-liquid extraction for downstream processing of biomolecules, process engineering and process scale-up. He has to his credit 65 research papers published in peer reviewed international journals, 7 book chapters, 2 books edited, 20 Indian & 6 International patents and 75 posters/oral presentations in National/International Conferences. He was awarded UNU-KIRIN Fellowship in the year 2008, for advanced research at National Food Research Institute, Tsukuba, Japan for a period of one year. He was a member of CFTRI team that won National award for Best Consultancy (2006) and Best Technology of CFTRI award (2011). As Principal Investigator, he handled many projects funded by external agencies and industries. He has guided 8 students for Ph.D., and 50 students for their Master/Bachelor degree project works. He was the Chief-Editor of Indian Food Industry Mag Journal, published by Association of Food Scientists and Technologist (I) from 2012-15 and now is in the Editorial Board of Journal of Food Scientists and Technology, published by Springer.

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			developing a hunger free world and a sustainable future. Contributions and innovations of CSIR in creation and propagation of affordable food technologies for a sustainable future will be highlighted.			
2. Affordable food technologies – Industry perspectives	Mrs. Ranjita Pradeep, Director, DDR Ventures LLP, Bangalore	1528	<p>DDR Ventures LLP,- Ayurda Refresco Coffee established on principles of innovation, dedication, and excellence, partners with CSIR-CFTRI, a globally renowned leader in Food Science &amp; Technology, to achieve its goals. This collaboration has propelled DDR Ventures into the food industry with their innovative instant coffee cubes, offering a convenient coffee preparation solution. With CSIR-CFTRI's advanced technology, guidance, and support, DDR Ventures is developing infused instant coffee cubes blended with spices and herbs, promoting health and longevity while preserving rich flavors and aroma. CSIR-CFTRI has been instrumental in building this product, significantly contributing to its value.</p> <p>Our shared dedication to promoting a healthy lifestyle and longevity presents a remarkable opportunity for us to synergize our strengths and expertise for greater impact in the coffee industry, benefiting the wider community we serve</p> <p>As founders, we are dedicated to building strong relationships with clients, partners, and suppliers, and tailoring solutions to their unique needs</p> <p>We aim to achieve a 3X turnover growth in the coming year. Ayurda is looking for the upcoming turnover of 30 to 50 lakhs for FY 24-25, 1.5 CR for FY 25-26, and 2.5 CR for FY</p>		<p>Mrs Ranjita Pradeep is a successful entrepreneur who has been in the business for the past 16 years. After completing her Master's degree in Business, she pursued a postgraduate degree in Marketing from the American Heritage University of Southern California, with a specialization in Marketing. Driven by her concern for global warming and climate change, Ranjita became passionate about making a positive impact on the world and her surroundings. She firmly believes that the key to healing the planet lies in shifting towards sustainable products and farming practices. To put her beliefs into action, Ranjita founded Ayurda coffee, a company dedicated to promoting health and longevity. Through Ayurda, she encourages the use of natural products from farmer communities and guides young entrepreneurs from rural and urban areas to pursue their dreams and passions. Ranjita's mission is to help people improve their lives by providing information and products for sustainable farming, access to healthy food and safe drinking water, and more time spent in nature. She believes that sustainable living is about respecting the boundaries of the earth's capacity to provide and seeking solutions that lead to a simpler, more self-sufficient way of living. As a global entrepreneur, Ranjita has gained valuable insights from working across different regions and cultures. She leverages this broad understanding to inform her decision-making and strategic vision for her company, ensuring that her efforts have a positive impact on the world.</p>	ranjita99@ayurdacoffee.com

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			26-27.			
3. Sustainable agriculture - Success stories of Mission Floriculture and Aroma	Dr Ajit Kumar Shasany, Director, CSIR-NBRI	1532	CSIR, a leading Indian research organization, has significantly contributed to sustainable agriculture through its focus on crop improvement, soil health, water conservation, pest management, waste reduction, and climate adaptation. Aroma and Floriculture Missions aim to promote sustainable development, innovation, and value addition in these sectors. Key achievements include developing new cultivars, improving agronomic practices, and promoting efficient extraction methods. These missions have contributed to the economic benefits of farmers and the overall sustainability of aromatic and floriculture crops. Few of these achievements are projected here, focusing on the research and development efforts, making significant contributions to promote sustainable development.		Dr Ajit Kumar Shasany is currently the Director at CSIR-NBRI, Lucknow, INDIA. Earlier he has been the Director of ICAR-NIPB, New Delhi, and Chief Scientist, CSIR-CIMAP, Lucknow. He is the fellow of NAAS and NAS India and has many national awards to his credit. His research interest includes plant diversity, metabolic engineering and bioprospection of Medicinal and Aromatic Plants. He has published 148 research publications with 101 granted patents to his credit. He has led the development of 46 clusters in Odisha under Aroma-Mission and leading the development of 329 clusters in 26 States and 4 Union Territories under Floriculture-Mission.	director@nbri.res.in
<b>Discussion &amp; Q&amp;A</b>		1544				

**Session 3 - Environment and Waste Management (SDG 7 – Affordable & clean energy; SDG 12 – Responsible consumption and production; and SDG 15 – Life on land)**

**Chair - Dr Harender S Bisht, Director, CSIR-IIP**

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<p>Overview of the Session</p>	<p>Dr Harender S Bisht, Director, CSIR-IIP</p>	<p>1550</p>	<p>India is committed to the Sustainable Development Goals (SDGs) established by the United Nations in 2015, aimed at addressing various social, economic, and environmental challenges by 2030. 'SDG 15: Life on Land' aims to protect and restore ecosystems essential for India's biodiversity, forest management, and to combat land degradation. This session on 'Biomass Valorization and Wastewater Management' explores innovative approaches adapted by CSIR to address environmental challenges through advanced scientific research. With India generating approximately more than 750 million metric tons (MMT) of agricultural biomass annually, CSIR's initiatives focus on transforming the surplus biomass (approximately 230 MMTPA) into valuable products such as biofuels, biochemicals, and biomaterials, thus mitigating greenhouse gas emissions and supporting rural bioeconomy. Concurrently, CSIR has pioneered cutting-edge wastewater management strategies using biological nutrient removal, advanced oxidation processes, and real-time monitoring to enhance treatment efficiency, recover valuable resources, and promote a circular economy for sustainable development.</p>		<p>Dr Harender Singh Bisht was awarded a Ph. D. in polymer science from H N B Garhwal University in 2003 while working at the Indian Institute of Petroleum, Dehradun. He did his first postdoctoral research work on Temperature and pH-responsive smart polymers at Wayne State University, Detroit, Michigan USA. These polymers were used as vectors of targeted gene delivery. He taught nanotechnology at Amity University Noida during 2006 -07. During 2007-08 he worked as assistant manager in R&amp;D of Dorf Ketal Chemicals (I) Pvt. Ltd., Mumbai He did his second postdoctoral research work on the functionalization of superparamagnetic iron oxide nanoparticles for MRI imaging applications at Bourgogne University, Dijon, France. He joined Reliance Industries Limited in 2009 and was leading the Coker and Advanced Carbon Materials group at Reliance, Jamnagar as Vice President - Refining R&amp;D. He took up his current position as Director, CSIR-Institute of Petroleum, a constituent laboratory of the Council of Scientific Research, India from August 2023 He has filled 11 patents and published 21 research papers in peer-reviewed journals.</p>	<p>harender.bi sht@iip.res. in</p>
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<p>1. Waste-to-Wealth: From research to real world impact</p>	<p>Dr C Anandharamakrishnan, Director, CSIR-NIIST</p>	<p>1555</p>	<p>Waste-to-Wealth technologies focus on reducing environmental impact while creating economic opportunities from materials that would otherwise be discarded. We are actively working on various waste-to-wealth strategies for global sustainability, aligning with the principles of environmental stewardship, resource efficiency and economic development. The technology to convert pathogenic biomedical waste into value-added soil additives, conversion of agri-biomass into biodegradable cutlery and plant-based leather, respectively as replacements for plastics and animal leather, fermentation technology for producing 2G ethanol from agro-waste, anaerobic digestion of kitchen waste to biogas, and creation of pavement blocks and tiles from industrial waste are typical examples for our successful interventions in this field.</p>		<p>Dr C Anandharamakrishnan is a renowned scientist and academician with a vast expertise in the fields of Food and Agro-processing. He has rendered a seminal contribution to his areas of expertise including engineered nano and micron scale nutrient delivery systems, 3D food printing, engineered human dynamic gastrointestinal system and glycaemic index assessment, spray drying and spray-freeze-drying of food products and computational modelling of food processing operations. One of his key research breakthroughs is the development of 'Engineered human stomach and small intestinal model system. Dr Anandharamakrishnan's research endeavours are well-documented in the form of highly cited 216 scholarly publications in SCI/Scopus-indexed journals having h index 64 with average impact factor of 5.787.</p>	<p>director@nii st.res.in</p>
<p>2. CSIR towards sustainable water &amp; wastewater management</p>	<p>Dr Girish Pophali, Chief Scientist, CSIR-NEERI</p>	<p>1607</p>	<p>This presentation highlights CSIR's key strengths and capabilities, and its strong link with the society &amp; industry w.r.t water &amp; wastewater management. The presentation showcases CSIR's presence across the width and length of the Country for various industrial wastewater management including Textile, Tanneries, Chemical, Pharmaceutical, Distilleries, Dairy, Slaughter house, SS rolling mills, and Heterogenous industries. It also depicts major milestones achieved in terms of full-scale implementation and R &amp; D studies for domestic and industrial wastewaters. A glimpse of state-of-the facilities for analysis of various</p>		<p>Dr Girish Pophali, a Ph.D. in Environmental Engineering, has 28 years' experience in R &amp; D, and is presently working as Chief Scientist in CSIR-NEERI. He has 28 years' experience in "Water and Wastewater treatment systems" and provided solutions to all types of Industrial wastewaters including Textile, Tanneries, Chemical, Pharmaceutical, Distilleries, Dairy, Slaughter house, SS rolling mills, Heterogenous etc. and developed Natural Treatment System for domestic Sewage. Dr Girish has published more than fifty-five papers in SCI Journals, granted Four International and Two National patents and authored Twelve Chapters in various books. He has successfully completed more than 30 projects in last ten years on Water treatment, and Domestic &amp; Industrial wastewaters. He is an expert member for various prestigious National level</p>	<p>gr_pophali@neeri.res.in</p>

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			environmental parameters is one of the key features of the talk. The presentation also brings some recent success stories of CSIR for domestic & industrial wastewater, and faecal sludge management.		committees on matters related to Water & Wastewater Management. Some of his recent work include Indo – European Project on implementation of techno-economic solutions for sewage and faecal sludge management under project called “PAVITR”; Upgradation and retrofitting of 7 CETPs in Ahmedabad, Gujarat; Zero Liquid Discharge (ZLD) system for RO reject at Petrochemicals, Chennai; Implementation of sewerage system and 2 STPs at Narmada Nagar MP; Bio-medical and laboratory liquid waste treatment & management, and Upgradation of large scale “slaughterhouse industries” in UP. Dr Girish has guided over 25 post graduate & undergraduate students for project work and supervised 4 Ph.D. scholars in last 10 years.	
<b>Discussion &amp; Q&amp;A</b>		1619				

### Session 4 - Sustainable Infrastructure (SDG 9 – Industry, innovation & infrastructure and SDG 11 – Sustainable cities and communities) Chair - Dr Manoranjan Parida, Director, CSIR-CRRI

Overview of the Session	Prof Manoranjan Parida, Director, CSIR-CRRI	1625			<p>Prof Manoranjan Parida, is presently Director of CSIR-Central Road Research Institute. He was Deputy Director at IIT Roorkee before joining CSIR-CRRI. He has been MoRTH Chair Professor on Development of Highway System in India at IIT Roorkee during 2013-2017. Design and Development of Noise Barrier for Flyovers in Delhi is an innovative contribution by him. He has provided substantial inputs for third party quality audit of 1700 km. of State Highway in the State of Bihar (during 2007-2013) under the RSVY Project. He has supervised 35 Ph.D. Theses and published more than 450 papers in Journals/Conferences. He has provided consultancy for more than 350 urban road infrastructure projects, intercity corridors, rural roads, and expressways. As a Director of CRRI he has played a crucial role in the development of Steel Slag Road Technology. AI based Road Safety Solutions for Nagpur (iRASTE), Third Party Quality Evaluation of Dwarka Expressway, Promotion of Usage of</p>	director.crrri@nic.in
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					<p>Industrial Waste in Road Construction and providing solutions to road infrastructure development in border areas. He received Pt. Jawaharlal Nehru Birth Centenary Award in the year 2004 from Indian Road Congress. He has received the Outstanding Teacher Award of IIT Roorkee. He is presently Convener of Urban Roads &amp; Streets Committee (H-8) of Indian Roads Congress, New Delhi. He is convener of PCD6 (Bitumen, Tar &amp; Other Products) Committee of Bureau of Indian Standards.</p>	
<p>1. Hazard-resilient infrastructure</p>	<p>Dr N Anandavalli, Director, CSIR-SERC</p>	<p>1630</p>	<p>India is prone to various natural hazards. As indicated in the Sendai Framework for Disaster Risk Reduction (DRR) 2015-2030, with the ever increase in population and the associated infrastructure demands, their enhanced exposure to various hazards with little improvement in vulnerability levels is generating new risks and a steady rise in disaster related losses. The same is experienced in India with the continued damage to various infrastructure during seismic and other disasters. Transmission line towers are vulnerable to cyclones. Failure of TL towers interrupt the power supply. To address this, Emergency Retrieval System which is cost effective is presented.</p> <p>Number and magnitude of man-made hazards are increasing worldwide. Protecting structures against man-made hazards have been associated with military infrastructure of high importance. Loads induced on such infrastructure due to these man-made hazards include blast, impact and shock loads. These loads are transient in nature, while damage caused by them range from partial to complete collapse. In this regard, two technologies, namely, Laced Steel-Concrete Composite System and bullet resistant Security booth are</p>		<p>Dr N Anandavalli is presently the Director, CSIR - Structural Engineering Research Centre, Chennai. She completed her graduation from University of Madras in 1991 with University first rank and won "The Rao Bahadur S.Subbarayachariyar Gold Medal". She received Ministry of Human Resources Scholarship for pursuing her post graduate studies at PSG College of Technology, Coimbatore (1991-1993), where she was ranked first. She received the CSIR-JRF and SRF fellowship during 1993 - 1996. After working for a brief period in design consultancy firms, she joined CSIR-SERC as Scientist in 1998. She was awarded Ph.D. degree from Anna University for her doctoral studies on 'Experimental and analytical studies on laced reinforced concrete and laced steel-concrete composite elements', which was highly commended by Indian and Foreign examiners. Her research interests include blast response behaviour of structures, computational methods, sustainable materials and multi-scale modelling of composite materials. Her research contributions are towards strategic area, which is of national importance.</p> <p>Dr N Anandavalli is an elected "Fellow of the Indian National Academy of Engineering (INAE)" and a "fellow of the Institution of Engineers (IEI)" and as "Member of ASCE (American Society of Civil Engineers)". She is life member of "Indian Concrete Institute" and "Computer Society of India".</p> <p>She is the recipient of "The Sir Arthur Cotton Memorial Prize 2003", "John C Gammon Prize 2016" from the Institution of Engineers (India) and "Dr. M. Ramaiah Prize 2017" from CSIR-SERC for her papers. She was awarded the Raman Research</p>	<p>director@s erc.res.in</p>

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presented.

Emergency Retrieval System (ERS) for Power Lines developed by CSIR-SERC. Power Transmission Lines (TL) are the infrastructural facilities of National importance, spanning several hundreds of circuit kilometres in length, transporting electricity from power generation plants to the distribution substations. Steel latticed towers are used to support the TLs at regular interval. Failure of TL towers due to natural calamities or manmade damages cause interruption of power transmission.

Emergency restoration systems (ERS) are modular aluminium towers used for quick restoration of power on damaged power transmission lines with a minimal power interruption. These are temporary structures that can be deployed typically in 2-3 days, as against several weeks required for permanent restoration of the towers. CSIR-SERC has developed an indigenous, unique ERS technology that comprises lightweight modules connected with an innovative connection system supported by a novel two-pin gimbal joint and easy to-construct foundation system. Laced Steel-Concrete Composite System Ductility and structural integrity are essentially required for structures subjected to suddenly applied dynamic loads such as blast, impact, earthquake etc. Concrete, which is normally brittle, is reinforced suitably with steel bars to form laced reinforced concrete (LRC) to enhance the ductility and integrity for use in blast resistant design of structures. However, LRC construction is complex due to congestion of reinforcement. Also, concrete

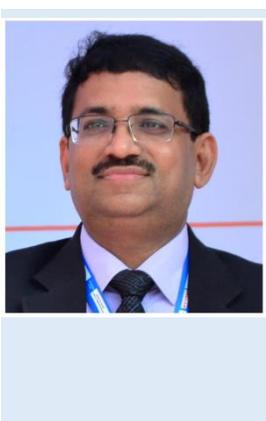
Fellowship 2014-2015 to conduct research on "Investigations on behaviour of concrete using meso scale models" at Department of Civil Engineering, Johns Hopkins University, Baltimore, USA. She was recognised as one of the "India's Most Inspiring Women Engineers & Scientists" by Engineering Watch for the year 2014. She has been nominated by the Honourable Governor of Tamilnadu as one of the syndicate member of Madras University, Chennai and Planning Board member of Bharathidasan University, Tiruchirapalli;

She has one US patent and Indian patent granted on 'Laced Composite System' based on her work. She is Member of BIS committee - CED 39 - 39.2 (sub) - Blast Resistant Design of Structures and BIS committee - CED 38 Special Structures Sectional Committee. She has mentored many graduate and post-graduate students from various engineering colleges and universities. She is guiding few Ph. D. students for their doctoral work.

In addition to her role as Director, CSIR-SERC, she is the co-ordinating director for CSIR Madras Complex consisting of regional units of 5 CSIR laboratories. She is also leading the Civil, Infrastructure and Engineering Theme of CSIR as the Theme Director and functioning as the Director of Engineering Coordination of CSIR.

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			<p>confined within the reinforcement grill is only effective. Possibility of incorrect interpretation leads to erroneous construction. This difficulty has created interest in developing a simpler structural system, which has properties required for resisting suddenly applied dynamic loads. A new Laced Steel-Concrete Composite (LSCC) System was developed by CSIR-SERC, which has enhanced blast resistance in terms of support rotation.</p> <p>Bullet resistant security booth CSIR-SERC have developed a booth/shack for military and security personnel. The security booth is modular type and made up of steel fiber reinforced cementitious composite panels fitted in steel frame. The booth has been designed for providing level-III protection against multiple hits of 7.62 AP projectiles as per NIJ standard. Few Salient features of the developed security booth are Easy to install, repair and replace, Better ricochet resistance, Fully indigenous materials, Aesthetic look, Cost-effective and Mobility.</p>			
<p>2. Sustainable C&amp;D waste utilisation in building products</p>	<p>Prof SK Singh, Chief Scientist, CSIR-CBRI</p>	<p>1642</p>	<p>The C&amp;D waste recycling, processing and sustainable utilization needs special attention in India. C &amp; D waste is being generated around 1 million tons per day. If we look into the Delhi NCR only, which generates about 8000-10,000 tons per day. Looking into the Global annual consumption of total aggregates is about 50 billion tons worldwide. Fine aggregates consumption in India is ~ 2.50 billion tons per annum. Therefore, the C&amp;D waste products needs to be gainfully utilized in construction sector for sustainable development. India needs to add about 800</p>		<p>Prof SK Singh is Chief Scientist &amp; Head, CSIR-CBRI Delhi Centre. He is Professor in AcSIR. His main research interests are in the areas of Newer Cementitious Materials, Wastes Utilization, Carbon Sequestration, Geopolymer concrete, Distress Diagnosis and Rehabilitation of Structures. He is deeply associated with more than 128 sponsored research &amp; consultancy projects and published 98 research papers. He has also published two books, edited five proceedings and five training manuals. He has one patent. He has transferred five technologies to industries. Prof. Singh has international associations and extensively travelled to countries like USA, UK, Australia, South Korea, Greece, Srilanka, UAE, Nepal etc. Prof. Singh is the recipient of Outstanding Concrete</p>	<p>sksingh@c bri.res.in</p>

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		<p>million sq. metres of commercial and residential space every year by 2030 for going to be a developed country by 2047. Infrastructure in particular to urban and rural areas will be a main focus area of the Govt. Therefore, constructing built environment requires a great speed, to meet the requirements, which leads to extreme pressure on natural resources. Therefore, looking into the environmental considerations, alternative materials/ aggregates in particular to C&amp;D waste needs to be utilize for sustainable development. The increasing construction activity, it is imperative to find more efficient solutions to manage, process and utilize the C&amp;D waste in construction. There are several issues and challenges in particular to C&amp;D waste in India but there is great opportunity as C&amp;D waste is one of the largest solid waste in the world. In this context, there is a huge demand for technologies that will support waste reduction and recycling waste material. CSIR-CBRI provided several technological intervention towards sustainable waste management.</p>		<p>Technologist Award of ICI in Yr 2023, Eminent Engineer Award of the IEI in the Yr 2016, Young Scientist Award of Govt. of UP in Yr 2000, Outstanding Concrete Technology Award of ICI Uttarakahnd Centre in the Yr 2021, ICI-Best Paper Published in ICI Journal Award for the Year 2021, E. P. Nicolaides Award of the IEI for Best Paper in Yr 2018. He has also received Diamond Jubilee Technology Award and Best Paper Award of CSIR-CBRI in Year 2017 and 2018 respectively. Prof. Singh is member of BIS, IRC &amp; other committees. He is Fellow of ICI and IEI and life member of ACI, IRC, ISWE, ISCMS, ACI, ISET, IGS, IIBE etc. Prof. Singh has served as Vice President (North), Indian Concrete Institute during 2011-2013 and Honorary Secretary of The Institution of Engineers (India), Roorkee Centre for the Year 2008-10. He has also served as founding Coordinator and Honorary Secretary of Ghaziabad Centre of Indian Concrete Institute from 1997 to 2002. He also served as member of National Executive Committee of ISET, ISCMS, and other professional bodies.</p>	
<b>Discussion &amp; Q&amp;A</b>	1654				
<b>Vote of Thanks</b> <i>Dr Yatendra K. Satija, Scientist, ISTAD, CSIR</i>	1658	Formal Vote of Thanks to the Speakers and Audience would be presented			yksatija@csir.res.in

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**Day 2: 19 September 2024; Time: 14:30 hrs to 17:00 hrs (IST)**

Register : <https://sciencesummitunga.vfairs.com/en/registration-form>

### Day 2: Session on “Strengthening South-South Cooperation”: 1430 hrs -1700 hrs

Title	Speaker	Time, hrs	About the talk	Photograph of the speaker	Profile of the Speaker	Email of the speaker
Welcome and introduction to the Day 2 Sessions	Dr Rama Swami Bansal, Head, ISTAD, CSIR	1430	Welcome and Introduction to the Day 2 of scientific sessions titled CSIR for Connect, Collaborate, Converge and Convert (5C) for Global Sustainable Development”		Dr Rama Swami Bansal joined the Council of Scientific & Industrial Research (CSIR), Ministry of Science & Technology, Government of India in 1997. She is the Head of the International S&T Affairs Directorate (ISTAD) of the CSIR. She has been fostering S&T Cooperation of CSIR institutes with their partners abroad and has successfully launched several cooperation programmes. Dr Bansal is assisting Director General of CSIR in promoting specific international networking. She has a rich experience of nearly 30 years in management of International S&T Cooperation and Coordination of International Bilateral and Multilateral programmes. earlier at Department of Science & Technology, in CSIR and also as an S&T Counselor and Head of the Science & Technology Wing of the Embassy of India in Moscow, Russia during June 2011 to June 2015.	rsb@csir.res.in

### Session 5 - Climate Change (SDG 13 – Climate action) Chair - Dr Atul Narayan Vaidya, Director, CSIR-NEERI

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<p>Overview of the Session</p>	<p>Dr Atul Narayan Vaidya, Director, CSIR-NEERI</p>	<p>1433 Climate change effects have been established beyond doubt and scientific debate can only be on the extent of the impact. Nevertheless, Climate action is any way imperative and has to be initiated without any delays. CO<sub>2</sub>, Methane and other known green House Gasses (GHG) are responsible for climate change and all climate action strategies are to be directed towards possible elimination or minimization of GHG emissions. Emissions of CO<sub>2</sub> are linked to energy usage, especially from fossil fuels or carbon abundant fuels, and can have limitations on mitigation. Also, mitigation or any such effort needs a scientific data on emissions and tools for that. Therefore, Climate action may need, apart for well discussed CCUS strategies, emphasis on</p> <ul style="list-style-type: none"> <li>• Data on quantification of GHGs</li> <li>• Different scientific tools needed for estimation and inventories</li> <li>• Alternate energy sources or Clean energy sources that would not generate CO<sub>2</sub> upon usage.</li> </ul> <p>Therefore, this year, we have planned three lectures in this session to address above referred points and these lectures would cover hydrogen economy, Airborne geophysical measurements, and GHG inventory and mitigation in waste sector in India.</p>		<p>Dr Atul Vaidya did B. Tech. in Chemical Engineering from Laxminarayan Institute of Technology (LIT), Nagpur and M. Tech. in Chemical Engineering from IIT-Bombay. He obtained Ph.D. in Chemical Engineering from RTM Nagpur University. At present, Dr. Vaidya is Director of the CSIR-National Environmental Engineering Research Institute (CSIR-NEERI). Earlier, he was Chief Scientist and Head of Chemical and Hazardous Waste Management Division, CSIR-NEERI. He has over 34 years of research experience in environmental science and engineering, especially in waste management. Dr. Vaidya has extensively worked on various aspects of waste management, including characterization, treatment, reuse and recycle, impacts on the environment, Green House Gas (GHG) emissions and environmentally sound practices, such as waste minimization, clean technology, circular economy. He is also actively working for Stockholm convention, UNFCCC and Minimata convention. He also has experience in biotechnology and technology demonstration. He has implemented effective technological options for environmentally sound management of hazardous wastes at various industries in the country. Dr. Vaidya has facilitated decision-making across the country through his basic and translational interdisciplinary research on various environmental issues. His contributions in national and international environmental policies have been noteworthy. He has published many research papers in national and international journals.</p>	<p>director@n eeri.res.in</p>
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<p>1. Airborne geophysics for mineral and groundwater exploration</p>	<p>Dr M Prasanthi Lakshmi, Principal Scientist, CSIR-NGRI</p>	<p>1438</p>	<p>Airborne Geophysics is an efficient and cost-effective method for fast exploration of large, and sometimes inaccessible, areas for mineral and groundwater resources. National Geophysical Research Institute (CSIR-NGRI) realised the importance of airborne geophysical surveys soon after its inception, initiated this facility in 1965 and carried out first experimental survey in 1967. The first ever aeromagnetic survey in Antarctica was conducted by CSIR-NGRI in 1986. Over the last sixty years, the institute has acquired data I various parts of the country for hydrocarbons, mineral, kimberlite &amp; groundwater exploration in various parts of the country and has gained expertise of conducting high resolution multi-parameter airborne geophysical surveys and data interpretation. The institute has been flying for uranium exploration for augmentation of uranium resources in India. CSIR-NGRI has been contributing to the studies related to groundwater exploration and management through high resolution aquifer mapping. The institute has also contributed in mapping the subsurface for tunnel construction in rugged terrains.</p>		<p>Dr Mallipeddi Prasanthi Lakshmi received her M.Sc (Tech) degree in Geophysics from Andhra University in 1999. Soon after, she joined as a research scholar in airborne geophysics group of NGRI, completed her doctoral work as a senior research fellow of CSIR, and was awarded Ph.D. for her thesis entitled 'Aeromagnetic image of a part of peninsular India and its relation to geology and structure' in 2005. In 2006, she joined NGRI as junior scientist in airborne geophysics group. She participated in several projects over various parts of India for mineral exploration in general and kimberlite exploration in particular. For the last two decades, she has been actively involved in high resolution multi-parameter heliborne geophysical surveys for uranium exploration over several parts of India, sponsored by the Department of Atomic Energy for augmentation of uranium resources in India. She is having keen interest in evolving procedures and techniques for airborne geophysical data processing and interpretation.</p>	<p>prasanti_m p@ngri.res. in</p>
<p>2. Refinement of GHG inventory and mitigation for waste sector in India</p>	<p>Er Jowin Joseph, Senior Scientist, CSIR-NEERI</p>	<p>1450</p>	<p>Over the years with a rapidly growing economy India has become the 5th largest GDP nation in the world. Though being one of the largest GHG emitters, the country has the lowest per capita emissions among G20 nations. This talk gives an overview on the systematic approaches taken by the country in improving its inventory on GHG emissions, in addition to the various scientific initiatives for efficient waste management across the</p>		<p>Er. Jowin Joseph holds a master's degree in Environmental Engineering and is designated as a Senior Scientist at the CSIR-National Environmental Engineering Research Institute, India. His field of interest primarily involves Waste Management and he majorly works on the sectors -Municipal Solid Waste Management, Industrial Hazardous Waste Management, Contaminated Sites Assessment and Remediation. He has about 8 years of work experience contributing towards various research and consultancy projects of national importance. He also serves as an expert member in various joint committees</p>	<p>jmt.joseph @neeri.res. in</p>



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					of Administration, SITRA Coimbatore and the Governing Council of FDDI.	
1. Responsible governance for research and innovation in science	Prof Ranjana Aggarwal, Director, CSIR-NIScPR	1515			<p>Prof Ranjana Aggarwal is the founder Director of CSIR-National Institute of Science Communication and Policy Research (CSIR-NIScPR), New Delhi. Prior to taking over as Director, CSIR CSIR-National Institute of Science Technology and Development Studies (NISTADS) she was professor of Chemistry and Director Women Studies Research Centre at Kurukshetra University, Kurukshetra.</p> <p>Prof Aggarwal obtained her Ph.D. at Kurushetra University. Subsequently, she worked in many well-known European labs notably Cambridge University, Trinity College Dublin, Ireland and University of Trieste, Italy. She has made significant contributions in designing and synthesis of azaheterocycles of therapeutic interest through green routes. Besides chemistry, she is also actively engaged in evidence based Science Technology Innovation (STI) Policy Studies, Communicating Science to diverse stakeholders and creating livelihood for rural sector through intervention of CSIR technologies for sustainable development.</p> <p>Her research contributions have been acknowledged in the form of awards notably by Indian Chemical Society and Indian Science Congress and Commonwealth fellowship by ACU, London. She has more than 100 publications to her credit in journals of high repute and supervised 16 students for their Ph.D. She has been elected President of Chemical Science Section, 108th Indian Science Congress held at Nagpur.</p>	director@nisopr.res.in
2. Empowering global collaboration: WAITRO's role in advancing SDG impact	Ms Theresia Ningsi Astuti (WAITRO - RR for Asia and the Pacific), National Research and Innovation Agency (BRIN), Indonesia	1525	The World Association of Industrial and Technological Research Organizations (WAITRO) is a non-profit entity founded in 1970 under the auspices of the United Nations. It connects global stakeholders in science, technology, and innovation, promoting collaboration among research institutions, universities, and industries to tackle global challenges and enhance the		<p>Ms Theresia Ningsi Astuti is a science and technology utilization analyst at Indonesia's National Research and Innovation Agency (BRIN). With 20 years of experience at the Indonesian Institute of Sciences (LIPI) in technology transfer and commercialization, she brings extensive expertise to her role. Theresia serves on the World Association of Industrial and Technological Research Organizations (WAITRO) as the Executive Board for Regional Representative of Asia and the Pacific. She holds a Bachelor's degree in Economics from STIE</p>	thni001@brin.go.id

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			<p>impact of research and development in line with the UN Sustainable Development Goals (SDGs). WAITRO's Innovation Ecosystem comprises various initiatives, including the SAIRA® Open Innovation Platform, the Capacity Development Program, the WAITRO Innovation Award, the Global Innovation Summit, and a Fellowship Program, all designed to strengthen skills, foster partnerships, and support emerging innovators.</p>		<p>SUPRA and a Master's in Communication Science from Mercu Buana University. Theresia is actively engaged in international collaborations to enhance cooperation between nations and industries.</p>	
<p>3. Regional technology cooperation for achieving SDGs in the Asia-Pacific</p>	<p>Dr Preeti Soni, Head of APCTT</p>	<p>1535</p>	<p>The Asia-Pacific region has shown slow and uneven progress on SDGs which needs a strong focus on STI, technology cooperation and partnerships. Gender equality considerations are critical for policies, equitable technology transfer, and capacity-building programmes tailored to the needs of women. Reducing gender gap in STI can be facilitated through increased investment and capacity building of women in STI areas and activities. Further, regional technology cooperation can be strengthened through multi-stakeholder partnerships, knowledge sharing, technology transfer and resource mobilization. APCTT supports member States to strengthen their national innovation systems for development and transfer of technologies through policy and analytical support, capacity building, knowledge sharing and partnerships.</p>		<p>Dr Preeti Soni is the Head of the Asian and Pacific Centre for Transfer of Technology (APCTT) of the United Nations Economic and Social Commission for Asia and the Pacific. In this role, she is responsible for leading the work of the Centre in supporting member countries to strengthen science, technology and innovation policy and promote regional cooperation to achieve SDGs by 2030.</p> <p>Dr Soni's leadership and experience spans over a wide range of fields including policy analysis, strategic planning in the areas of environment, climate change, energy, technology and sustainable development and programme implementation. Dr. Soni served as the Chief, Climate Change, Resilience and Energy Programme at UNDP in India from 2018 to June 2021. She worked with UNDP India from 2004 and held multiple positions of Assistant Country Director and Head (Energy and Environment), Advisor (Climate Change), and the Resource Person for the UN Solution Exchange Environment Community. She was instrumental in developing several strategic programmes and partnerships and overseeing their implementation at UNDP. Prior to UNDP India, she worked with The Energy and Resources Institute (TERI) in New Delhi. She holds a PhD in Environmental Economics and Climate Policy from the Institute of Environmental Studies, Vrije University, The Netherlands and a Master's in Economics from Delhi School of Economics, Delhi University, India.</p>	<p>preeti.soni @un.org</p>

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4. Voices from Africa	Mr G Balasubramanian, High Commissioner of India to the Federal Republic of Nigeria	1545			Mr G Balasubramanian, High Commissioner of India to Nigeria. A Post-Graduate in Public Administration, G. Balasubramanian, joined the Indian Foreign Service in 1998. He has served in different capacities in the Indian Missions in Moscow, Dushanbe, Washington DC and Bangkok including as Deputy Chief of Mission in Bangkok and Moscow. He was also the Deputy Permanent Representative of India to UNESCAP in Bangkok. At the Ministry of External Affairs, he has been the Desk Officer on Pakistan, Joint Secretary (Europe West) and Joint Secretary (Administration). He is married and has a son.	hc.abuja@mea.gov.in
5. Twinning program between Ethiopian MIDI and CSIR	Mr Workneh Deleegn Shumete, Deputy General Manager of WODA Metal Industry PLC, Ethiopia	1555	The Ethiopian MIDI aiming to fulfilling the objective set in developing metal industry sector as part of national growth and transformation plan has approached CSIR and its pertinent institutions NML, CMERI, CEERI, CSIO and IMMT for the human resource, Technology and System capacity development. Visit arranged in Aug. 2014 for Ethiopian MIDI to CSIR and LOT has been signed by MIDI and CSIR. CSIR sent experts for data collection regards technology, Knowhow, and system gap analysis. The Experts has visited various Industries, Universities, MIDI and relevant stakeholders and partners. Following the gap analysis, implementation schedule and final agreement is made.		Workneh Deleegn Shumete, born in 1966 in Ethiopia has graduated in Mechanical Engineering with BSc degree from Addis Ababa University in 1989. He got MBA from the Open University Business School in 2008. He worked in Ethiopian Engineering Commission at different levels to the capacity of Industrial Development Department Head for 20 years. He served as General manager of Akaki Spare part and Hand Tools manufacturing Company for 3 years. Also, he worked as the Director General of Ethiopian Metal Industry Development Institute for 8 years. Currently, he is working as Dy General Manager of WODA Metal Industry.	workneh_deleegn@yahoo.com
<b>Discussion &amp; Q&amp;A</b>		1605				
Concluding Session with a Panel	<b>Moderator - Dr K J Sreeram, Director, CSIR-</b>	1610				

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**Discussion -  
Strengthening  
South-South  
Cooperation  
for  
Sustainable  
Development**

**CLRI**

**Panel Experts:**

1. *HE Mr David Puig,  
Ambassador of  
the Dominican  
Republic to  
India*
2. *Dr Amitava Bandopadhyay  
DG, Centre for  
Science &  
Technology of  
the Non-  
Aligned and  
Other  
Developing  
Countries  
(NAM S&T  
Centre), India*



HE David Puig is the Ambassador of the Dominican Republic to India since March 2021. He joined the Dominican Foreign Service in 2004 and has been posted in France, India, Egypt and Belgium. He holds two bachelor degrees, in political sciences and international relations from Sciences Po Paris and in philosophy from Université Paris 1 Panthéon-Sorbonne, as well as a Master's in political thought from Sciences Po Paris. Throughout his diplomatic career he has worked in both bilateral and multilateral settings, and has represented the Dominican Republic in negotiations and international fora. To his command of English, Spanish and French, he has added, through his time in India and the Middle East, conversational skills in Hindi and Egyptian Arabic.

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Dr Amitava Bandopadhyay is the Director General of the Centre for Science & Technology of the Non-Aligned and Other Developing Countries (NAM S&T Centre), an Inter-Governmental Organisation in New Delhi from February 1, 2019. Before joining NAM S&T Centre, Dr. Bandopadhyay was Head of the Recruitment & Assessment Board (CSIR-RAB), Council of Scientific & Industrial Research, New Delhi (2016-18). During 2013-16, Dr. Bandopadhyay had worked as Chief Scientist and Head of CSIR's International Science & Technology Affairs Directorate (ISTAD), New Delhi. As Head of the International S&T Affairs Directorate, Dr. Bandopadhyay was responsible for coordinating CSIR's international scientific & technological activities around the world including international R&D programs, research contracts and training activities. During 1991-2012, Dr. Bandopadhyay has worked in the CSIR-National Metallurgical Laboratory, Jamshedpur, India in various capacities in the areas of ferrous extractive metallurgy and environmental & energy management. He led a number of

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3. *Dr. Rabindra Prasad Dhakal, Secretary, Nepal Academy of Science and Technology (NAST), Nepal*



internationally funded R&D projects.

Dr. Bandopadhyay has over 35 years of R&D experience in the areas of mineral and materials processing; environment and energy related issues in metallurgical & chemical process industries; development of cleaner technologies; management of R&D programs and related activities.

He did his B. Chem. Engg. from Jadavpur University; ME in Chemical Engineering from Indian Institute of Science, Bangalore and Ph.D. in Metallurgical Engineering from Indian IIT, Kharagpur. He did his post-doctoral studies from the Pennsylvania State University, State College, USA (1989-91) and the University of Leeds, UK (2001). He has more than 125 research publications & presentations and 15 patents to his credit. He has also edited 7 books/conference proceedings.

Dr. Bandopadhyay is the recipient of the "Metallurgist of the Year Award" (National Metallurgist Day Award) from the Ministry of Steel & Mines, Govt. of India (1998); "Indranil Award – 1997" from the Mining, Geological & Metallurgical Institute of India (MGMI) and "PL Thermal Sciences – ITAS Award – 1993" for his scientific & technological contributions. He is also the co-recipient of the "Green Apple International Award – 2012" from the United Kingdom for the project "Chemical free arsenic removal for rural water supply" with Prof. Bhaskar Sengupta, OBE from the Queen's University, Belfast, UK. He is a Fellow of the Indian Institute of Metals and recipient of the Royal Academy of Engineering Visiting Fellowship to the Queen's University, Belfast, UK during 2011.

Dr. Rabindra Prasad Dhakal is the Secretary of Nepal Academy of Science and Technology (NAST), Khumaltar, Lalitpur, Nepal. He has successfully served NAST for 12 years in various capacities (As a Chief Scientist for a year, Senior Scientist for 8 years, the Faculty Chief, Technology Faculty for 5 years, and the Spokesperson of NAST for 2 years). He received his Ph.D. in Chemical Engineering from Saga University, Japan in 2005 AD. Similarly, he was awarded the UNESCO Fellowship in 2001 AD, JSPS Post-Doctoral Fellowship in 2007 AD, and JSPS

secretary@nast.org.np, dhakalrabindra3@gmail.com

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4. Ms. Sharizad Dahlan,  
Director,  
International  
Science,  
Technology  
and Innovation  
Centre for  
South-South  
Cooperation  
(ISTIC),  
UNESCO,  
Malaysia



Bridge Fellowship in 2022 AD in Tokyo University. Dr. Dhakal has also successfully served as a Scientific Advisor to the former Prime Minister of Nepal, Mr. Pushpa Kamal Dahal. Dr. Dhakal has been immensely contributing as an editor, reviewer, and evaluator of various Journals and Periodicals, including NAM S&T Center's Publication Series for many a year. Similarly, Dr. Dhakal has been contributing as one of the Jury Members of UNESCO and Loreal Foundation Awards for the last 6 years. He has been contributing to the national and international scientific communities and professional societies in different capacities as a Citizen Scientist, Motivator, Enthusiast, and recently as a Science Administrator.

Sharizad Dahlan assumed the position of the Director of the International Science, Technology and Innovation Centre for South-South Cooperation (ISTIC) under the auspices of UNESCO in June 2020. She has more than 20 years of experience in international collaboration and partnerships, R&D and technology management and institutional governance, with a primary focus on science and technology sectors. Trained as a microbiologist, Sharizad graduated from the Flinders University of South Australia. Before joining ISTIC she was attached to the Academy of Sciences Malaysia where she headed the STI Strategic Initiatives and Partnership Division before assuming the position of Chief of International Affairs and Communication (CIAC). Prior to this, she served the International Science Council Regional Office for Asia and the Pacific (ISC ROAP) where she was responsible for developing and implementing its regional strategy and programmes, with a special focus on areas like Urban Health and Wellbeing, Disaster Risk Reduction, Science Policy and Inter-Regional collaborations.

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5. Dr Pratip Vongbandit,  
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Dr. Pratip Vongbandit is the Deputy Governor of the Research & Development Group for Sustainable Development at the Thailand Institute of Scientific and Technological Research

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## CSIR for Connect, Collaborate, Converge and Convert (5C) for Global Sustainable Development

Science Summit at the 79 United Nation General Assembly (SSUNGA79)

Research and Development for Sustainable Development, Thailand  
Institute of Scientific and Technological Research (TISTR), Thailand

6. Dr Rama Swami Bansal, Head, ISTAD, CSIR



(TISTR). He holds a PhD in Mechanical Engineering from Brunel University, UK, with extensive experience in organizational management, engineering consultancy, and ISO/IEC 17025 standards. Dr. Pratip specializes in materials properties and testing and is passionate about addressing global challenges such as global warming, the circular economy, carbon neutrality, and the United Nations' Sustainable Development Goals (SDGs). He also advocates for Thailand's Sufficiency Economy philosophy as a pathway to sustainability.



Dr Rama Swami Bansal joined the Council of Scientific & Industrial Research (CSIR), Ministry of Science & Technology, Government of India in 1997. She is the Head of the International S&T Affairs Directorate (ISTAD) of the CSIR. She has been fostering S&T Cooperation of CSIR institutes with their partners abroad and has successfully launched several cooperation programmes. Dr Bansal is assisting Director General of CSIR in promoting specific international networking. She has a rich experience of nearly 30 years in management of International S&T Cooperation and Coordination of International Bilateral and Multilateral programmes. earlier at Department of Science & Technology, in CSIR and also as an S&T Counselor and Head of the Science & Technology Wing of the Embassy of India in Moscow, Russia during June 2011 to June 2015.

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